DOCUMENT RESUME

ED 268 153 TM 860 155

AUTHOR Ledford, Bruce R.; Ledford, Suzanne Y.
TITLE The Effects of Preconscious Cues upon the Automatic Activation of Self-Esteem of Selected Middle School Students.
PUB DATE Nov 85
NOTE 92p.; Requirement for Project 1246. Tucson Unified School District.
PUB TYPE Reports - Research/Technical (143) -- Dissertations/Theses - Undetermined (040)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Affective Measures; Analysis of Variance; *Cues; *Figural Aftereffects; Grade 6; Intermediate Grades; Low Achievement; *Paper (Material); *Rating Scales; Self Concept Measures; *Self Esteem; Sensory Experience; Statistical Significance; Visual Perception; Visual Stimuli
IDENTIFIERS *Rosenberg Self Esteem Scale; *Subliminal Perception

ABSTRACT

This study investigated whether grade six students' self-esteem could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the medium of a specially prepared paper. It also investigated whether any statistically significant differences existed between the effects on self-esteem of a selected stimulus presented below the threshold of conscious awareness of under- (Target Learners) and average-achieving students (Mainstream Learners). The self-esteem of each subject in both experimental and control groups was measured by the Rosenberg Self-Esteem Scale (RSES). The RSES administered to the experimental group was printed on paper that contained a visual image, an "I Love You" and the symbol of a Valentine heart, that was perceivable below conscious awareness. The RSES administered to the control group was on untreated paper. Analysis of variance indicated statistical significance when comparing the within group variance to the among group variance. It was concluded that: (1) both Mainstream and Target experimental groups showed enhancement of self-esteem, and (2) subjects who were identified as under-achievers and who had problems in socialization appeared to benefit slightly more from the techniques than did mainstream subjects. (PN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED268153

The Effects of Preconscious Cues Upon the Automatic Activation of Self-Esteem of Selected Middle School Students

by

Bruce R. Ledford, Ed.D
Associate Professor of Educational Media
Auburn University
Auburn, Alabama

Suzanne Y. Ledford, Ed.D.
Coordinator of Social Studies
Auburn School District
Auburn, Alabama

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

B. R. Ledford

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

TM 860 155

Submitted to the Tucson Unified School District,
Tucson, Arizona in fulfillment of project #1246
November, 1985

COPYRIGHT
November, 1985

TABLE OF CONTENTS

List of Tables ix

Chapter

1. INTRODUCTION 1

Statement of the Problem
Purpose of the Study
Importance of the Study
Hypotheses
Procedures
Delimitations
Genealogy of the Study
Definition of Terms
Organization of the Remainder of the Study

2. REVIEW OF RELATED LITERATURE 12

Subliminal Stimulation as a Learning Facilitator
Further Studies of the Existence of Subliminal Perception
Color and Light Determinations
Creativity-Related Studies
Dream-Related Research
Subliminals and Consumer Behavior
Studies Utilizing Nonverbal Measures
Hemispheric Conditions
Subliminal Perception and Unconscious Conflict
Summary

3. RESEARCH METHODOLOGY 42

Determination of Variables
Independent Variables
Participants
Dependent Variable
Native Validity and Administration of the Instrument
Research Design

4. RESULTS AND ANALYSES OF DATA 47

5. SUMMARY, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS . . 57

Discussion
Conclusions

BIBLIOGRAPHY 67

APPENDICES 77

A. The Test Paper

B. The Master for the Preconscious Message

ABSTRACT

The primary purpose of the study was to determine if the self-esteem of selected sixth-grade subject's could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the medium of a specially prepared paper known as Super-Paper (TM).

Learners who had a record of under-achievement when indicators pointed to ability to achieve at average or above mainstream levels were selected as Target Learners. Each learner was randomly assigned to either of two groups designated as Target Control, which received no experimental stimulus, or Target Experimental, which did receive an experimental stimulus. Each of these groups was a member of a larger group designated as either Control or Experimental.

Learners who were achieving at normal or above normal levels were called Mainstream Learners and were randomly selected and randomly assigned to either Experimental or Control groups as were the target students.

The self-esteem of each of the subjects in the Experimental groups (both Mainstream and Target) was measured by the Rosenberg Self-Esteem Scale. The experiment variables which were administered to each subject was the paper on which the instrument was administered and the visual message contained on the paper. The paper was regular 8 1/2" x

BEST COPY AVAILABLE

11" flat-finish bond paper except a visual image had been placed on it to be perceived at a level below that of conscious awareness (see Appendix A). The message was designed to boost the self-esteem of the subjects. It contained the linguistic cue "I LOVE YOU" and the symbol of a Valentine heart in such a manner always to be in book order for the subject to view.

The self-esteem of each of the subjects in the Control group (both Mainstream and Target) was measured by the Rosenberg Self-Esteem Scale which was administered to each subject on untreated 8 1/2" x 11" flat-finish bond paper.

Data were collected and analyzed for statistical significance using the Analysis of Variance and t-test. The Alpha level .05 was chosen for statistical significance and each null hypothesis was accepted or rejected using that criterion.

Statistical significance was found when comparing the within group variance to the among group variance. Also, statistical significance was found between Experimental and Control groups, with the Experimental groups having the higher mean score. When comparing the Target Experimental with the Target Control, the Target Experimental group had a significantly higher score, as was the case when comparing the Target Experimental group with the Mainstream Control group. No other statistical significance was found.

Based upon the analysis of the data related to the study the following conclusions are drawn:

BEST COPY AVAILABLE

1. The technique of transmitting a message at a preconscious level via a specially treated paper is effective in enhancing the self-esteem of middle school age subjects.

2. Subjects who were identified as under-achievers and who had problems in socialization appeared to benefit slightly more from the techniques than did mainstream subjects.

3. Both Mainstream and Target Experimental groups showed enhancement of self-esteem.

BEST COPY AVAILABLE

ACKNOWLEDGEMENTS

The researchers acknowledge the invaluable contributions made by many persons relevant to the formulation and conduct of this study.

Gratitude is extended to Dr. Wilson Bryan Key whose work in the area of subliminal research has had an impact upon the researchers, but, more specifically for his suggestions and encouragement in conducting this study.

The researchers also acknowledge Dr. C. Dan Wright, Head, Educational Media, Auburn University, for the time, and logistical support necessary to conduct the study; Dr. Christopher Crowder, Assistant Director, Testing and Evaluation, Tucson Unified School District, for the opportunity to do the study; Dana Osman for his salient suggestions; Markie Hopson for typing the final report, and to many people around the United States who have demonstrated a high level of interest and support of the project.

Special acknowledgement goes to Gladys Chandler for her diligent editing of the drafts and of the final manuscript.

Finally, the researchers acknowledge the lasting influence of a pioneer in communication technology and of a friend who is greatly missed, Marshall McLuhan.

Dr. Bruce R. Ledford
Dr. Suzanne Y. Ledford

November, 1985

9 BEST COPY AVAILABLE

LIST OF TABLES

1. Analysis of Variance of Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of Selected Middle School Students 49

2. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Experimental Group and the Control Group of Selected Middle School Students 50

3. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Mainstream Control Group of Selected Middle School Students 51

4. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Target Control Group of Selected Middle School Students 52

5. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Mainstream Experimental Group Selected Middle School Students 53

6. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Mainstream Experimental Group and the Mainstream Control Group of Selected Middle School Students . . 53

7. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Control Group and the Mainstream Control Group of Selected Middle School Students 54

8. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Control Group and the Mainstream Experimental Group of Selected Middle School Students . . . 55

BEST COPY AVAILABLE

9. Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Group and the Mainstream Group of Selected Middle School Students 56

10. Summary of Findings of Statistical Analysis of Data Related to the Hypotheses 63

BEST COPY AVAILABLE

Chapter 1

INTRODUCTION

According to Carl Jung, humankind is laboriously developing consciousness.[1] Of human's 50,000 years existence only the most recent 6,000 years show any documentable evidence of literacy.[2] Only during these last 6,000 years have humans been capable of communicating from one lifetime to another. This altered state of consciousness has been attributed to the evolution of linear thought processes under the dominance of the left hemisphere of the brain. With this linear format links were made to connect the past, the present, and the future. These linear thought processes lay as groundwork for an organization of relationships between and among phenomena whereby a system of living was deduced as having logical consequences. Yet, even in the rational world of linear logic, the less-developed right hemisphere of the brain provided the necessary creative insights and intuitive abilities to discern the esoteric mysteries of living.

Current research abounds with evidence to support Jung's concept of consciousness as an evolutionary state still within the throes of

---

[1]Carl Jung, Man and His Symbols, (Garden City, NY: Doubleday and Co., 1964), pp. 18-104.

[2]Alvin Toffler, Future Shock, (New York, NY: Bantam Books, 1971), p. 14.

BEST COPY AVAILABLE

change. Recently psychiatrists and physicians have determined a higher state of consciousness is developing as the right hemisphere of the brain is now becoming the dominant.[3]

Consciousness, in its various guises, is at all times frail and thereby easily injured. A dissociation of consciousness is a common mental derangement. Moods are common to everyone and usually the person having the mood is at a loss to determine what stimuli has brought about this feeling. Thus, moods can be the result of unconsciously perceived or unrecognizable stimuli.

Similarly, anthropologists have noted in many primitive societies that consciousness is considered the workings of varied "bush souls." These "bush souls" contain a person's psychic identity. This identity can be lost, or fragmented, under the on-slaught of unchecked emotions. Consciousness is always open to fragmentation. Perceptions, innumerable and overlapping, find the consciousness having to deal simultaneously with a variety of sensations. The ability of a person to isolate even a portion of one's mind, a linear process, is a necessary ability to perform a prescribed task. Yet, this concentrating on one filtered sensation at the exclusion of other competing stimuli is an over-simplification of the reality of the learning process and leaves untreated the myriad of perceptions that the conscious mind has decided to de-emphasize in order to accent the conscious task. Left unanswered

---

[3]From statements made by Marshall McLuhan in the film Educational Directions: Where Do We Go From Here?, produced by East Texas State University and Phi Delta Kappa, 1977.

BEST COPY AVAILABLE

are the effects of the restricted stimuli on the learning task and of the consciousness as a whole.

Humans never perceive or comprehend anything absolutely. Perception is the foundation of learning. Yet, how well one perceives depends upon the individual's quality and quantity of sensory abilities. To interpret from sensory perception and derive meanings is affected not only by the actual physical state of the perceptions but how such experiences are integrated by other sensory experiences and of the influences of past cultural experiences. Such a complicated picture of the consciousness of the learner makes it obvious that there are an indefinite number of stimuli which are unknown to both the educator and the learner. These stimuli remain below the threshold of consciousness within the realms of the unconscious. They are absorbed subliminally; that is, without conscious knowledge.

Like all information available to the mind, within the confines of a learning task, it must be assumed that these stimuli have effects upon psychomotor skills, cognitive abilities, and attitudes of the learner. The unconscious, the denizen of much educated guesswork since the contributions of such as Freud and Jung, hold secrets of what influences humans. Constantly occurring subliminal stimulation, registered beneath a conscious level of perception, is one vehicle which can interrupt or reinforce learning. Due to the physical limitations of human's senses there will always be stimuli beneath the level of a learner's conscious awareness which will somehow affect their learning capabilities. It is the duty of research within education to explore those factors which influence learners and their learning environment. To ignore

BEST COPY AVAILABLE

the existence of subliminal stimuli, their reception by the learner, and their subsequent effects, is to make the assumption that the psyche is total. Those who reject the existence of subliminal stimulation merely express a misoneism.[4]

STATEMENT OF THE PROBLEM

The problem of the study was the effectiveness of a specially prepared paper in affecting the self-esteem of selected middle school students.

PURPOSE OF THE STUDY

The primary purpose of the study was to determine if the subjects' self-esteem could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the medium of the specially prepared paper. Other purposes included determining if any statistically significant differences existed between the effects on their self-esteem of a selected stimulus presented below the threshold of conscious awareness of mainstream students and of target students.

IMPORTANCE OF THE STUDY

To effect learning, that which can be defined as a desired behavioral change that is relatively stable for a relatively extended period of time and is void of undesirable side effects, is the goal of education. Yet, we have a seemingly infinite number of learners in our

---

[4]Jung, Man and His Symbols, pp. 18-104.

BEST COPY AVAILABLE

schools who, for an apparent variety of reasons, are not achieving to a degree or at a level that indications of ability say they should be. Low self-esteem was seen as one of those reasons.

Research findings by Ledford (1978), McCormack (1979), and Grant (1980) indicate that learner attitudes can be affected by stimuli presented at a preconscious level via a rheostatically controlled projection system. Ledford (1978) concluded that "constantly occurring stimulation, registered beneath a conscious level of perception, is one vehicle which can intercept or reinforce learning. Due to the physical limitations of [human's] senses there will always be stimuli beneath the level of a learner's conscious awareness which will somehow affect his learning capabilities. It is the duty of research within education to explore those factors which influence the learner and his learning environment." McCormack (1979) found that statistically significant differences resulted from different levels of projected light intensities and durations in an effort designed to manipulate students' submission of controlled attention to a learning task. McCormack also concluded "that this (his) study has served to further confirm the conclusions of the Ledford study." Grant (1980) attempted to find out if psychomotor skills of learners could be affected by the registration of preconscious stimulation. He found no such effect; neither actual participation nor submission of controlled attention toward psychomotor activities significantly affected. Grant did conclude that "a trend does exist that females could possibly be affected by visual . . . (preconscious) stimulation to a greater degree than males." It must be noted that the Grant study concentrated on the psychomotor domain while

BEST COPY AVAILABLE

the Ledford and McCormack studies dealt with the affective domains of learning. Their research findings are consistent with findings of other researchers which show little or no gain in the cognitive domain, but significant effect on the affective level.

The present study investigated the effects of preconscious visual stimuli on human development in the affective domain. The knowledge gained from this study can be of value to educators as they design learning events and help individuals become learners.

The following questions are to be answered by the study:

1. Can a students' self-esteem be affected by the presentation of a selected stimulus below the threshold of conscious awareness?

2. Are there any statistically significant differences between the effects on their self-esteem of a selected stimulus presented below the threshold of conscious awareness of mainstream students and of target students?

HYPOTHESES

Hypothesis: No statistically significant differences exist among the scores representing self-esteem of mainstream and target experimental and control middle school students as measured by the Rosenberg Self-Esteem Scale.

Sub-hypothesis I: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Experimental group and the Control group of selected middle school students.

BEST COPY AVAILABLE

Sub-hypothesis II: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Control group of selected middle school students.

Sub-hypothesis III: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Target Control group of selected middle school students.

Sub-hypothesis IV: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Experimental group of selected middle school students.

Sub-hypothesis V: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Mainstream Experimental group and the Mainstream Control group of selected middle school students.

Sub-hypothesis VI: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Control group of selected middle school students.

Sub-hypothesis VII: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Experimental group of selected middle school students.

Sub-hypothesis VIII: No statistically significant differences exist between the mean scores representing the self-esteem as measured

BEST COPY AVAILABLE

by the Rosenberg Self-Esteem Scale of the Target group and the Mainstream group of selected middle school students.

PROCEDURES

Learners who had a record of under-achievement when indicators pointed to ability to achieve at average or above mainstream levels were selected as Target Learners. Each learner was randomly assigned to either of two groups designated as Target Control, which received no experimental stimulus, or Target Experimental, which did receive an experimental stimulus. Each of these groups was a member of a larger group designated as either Control or Experimental.

Learners who were achieving at normal or above normal levels were called Mainstream Learners and were randomly selected and randomly assigned to either Experimental or Control groups as were the target students.

The self-esteem of each of the subjects in the Experimental groups (both Mainstream and Target) was measured by the Rosenberg Self-Esteem Scale. The experiment variables which were administered to each subject was the paper on which the instrument was administered and the visual message contained on the paper. The paper was regular 8 1/2" x 11" flat-finish bond paper except a visual image had been placed on it to be perceived at a level below that of conscious awareness (see Appendix A). The message was designed to boost the self-esteem of the subjects. It contained the linguistic cue "I LOVE YOU" and the symbol of a Valentine heart in such a manner always to be in book order for the subject to view.

BEST COPY AVAILABLE

The self-esteem of each of the subjects in the Control group (both Mainstream and Target) was measured by the Rosenberg Self-Esteem Scale which was administered to each subject on untreated 8 1/2" x 11" flat-finish bond paper.

Data were collected and analyzed for statistical significance using the Analysis of Variance and t-test. The Alpha level .05 was chosen for statistical significance and each null hypothesis was accepted or rejected using that criterion.

DELIMITATIONS

The subjects of this study were limited to randomly selected middle school students from the Tucson (Arizona) Unified School District during 1985.

GENEALOGY OF THE STUDY

Few studies are born whole, without connection to previous speculation, insight, or investigation. This study is a continuation of efforts on the part of the researchers to gain more knowledge about how the brain perceives, processes, and is affected by preconscious cues or issues and in situations related to the teaching and learning process. This study stands as a sequel to the earlier work of the author which clearly establish the possibility of subliminal visuals as a classroom tool for motivation and which compared thematic contents of the message. It also is built upon the research by NeuroCommunication Research

BEST COPY AVAILABLE

Laboratories, Inc. for Suppa Corporation, manufacturers of the specially processed and treated paper.[5]

DEFINITION OF TERMS

The following definitions were used within the context of this study:

Preconscious Perception: Perception below the threshold of conscious awareness.

Self-Esteem: A confidence and satisfaction in oneself.[6]

Subliminal Perception: Subliminal perception is defined as perception that meets criteria established by Dixon. These criteria are: (1) stimulation below predetermined awareness lines, (2) no reported awareness of the critical stimulus either during or after the experimental treatment, and (3) the evoking of responses which show to be contingent upon the stimulus and differ quantitatively from those evoked by the same stimulus when given supraliminally.[7]

---

[5]Sidney Weinstein, Curt Weinstein, and Ronald Drozdenko, Advertising on Super-Paper: Effects Upon Brain Response, Purchase Intention, and Simulated Purchase, Danbury, CT: NeuroCommunication Research Laboratories, Inc., West Kenosia Avenue, September, 1984.

[6]Webster's New Collegiate Dictionary, Springfield, MA: G. and C. Merriam Co., 1974.

[7]Norman F. Dixon, Subliminal Perception: The Nature of a Controversy (London: McGraw-Hill, 1971), p. 27.

BEST COPY AVAILABLE

ORGANIZATION OF THE REMAINDER OF THE STUDY

Chapter 2 presents a review of the literature relevant to the study. Chapter 3 describes the research procedures employed in the study. Chapter 4 provides an analysis of the data. The summary, findings, conclusions, and recommendations are presented in Chapter 5.

BEST COPY AVAILABLE

Chapter 2

REVIEW OF RELATED LITERATURE

In recent times, the phenomenon of reception of subliminal messages and subsequent behavioral change on the part of the receiver of the message has gained credibility and is widely accepted by the academic community.

Shevrin, in a statement before a U.S. House of Representatives Subcommittee of the Science and Technology Committee, testified that recent research results have amply demonstrated that the phenomenon does exist. "Scientific controversy now extends to understanding how it works, what it tells us about the relationship between conscious and unconscious psychological processes."[1] Becker, in a session presented to the American Society of Clinical Hypnosis 25th Annual Scientific Meeting in 1982, suggested a wide range of therapeutic, educational, and industrial application of preconscious stimulation applications, possibly limited only by the ingenuity of the therapist or investigator. Subliminal communication was seen to be efficient, unobtrusive,

---

[1]Howard Shevrin, Subliminal Perception and Subliminal Communication Technology Report prepared for initial testimony before the Science and Technology Subcommittee on Transportation, Aviation, and Materials, 98th Congress, August 6, 1984.

BEST COPY AVAILABLE

powerful, and it operates while one is fully aware of and attending to normal activities in work or recreation.[2]

Cognitive learning theory can be seen as a framework within which subliminal perception lies. Cognitive learning theory is concerned with, among other things, how the brain receives, processes, encodes, stores, and retrieves information available to it. Since our minds are always receiving more information at one time than we can apply selective attention to, it becomes selective about the information it chooses to pay conscious awareness. According to Shevrin, when stimuli enter and remain subliminal, they are more likely to be coded in many different ways simultaneously; this would appear to enable one to create new knowledge, even subconsciously, by the synthesis that is going to occur. Also, it would appear to be able to affect attitudes and perceptions that are not consciously developed.

The literature related to visual subliminal stimulation is voluminous. This review has as its emphasis the hypotheses, results, and conclusions of the relevant studies. The first section will present those studies which dealt directly with visual subliminal stimulation as a direct facilitator of learning. Studies exploring the existence of subliminal effects will be reviewed, followed by current studies of the relationships of visual subliminal messages, color and light identification, creativity, dreams, and consumer behaviors; studies utilizing nonverbal subject-response measures; and a section reviewing research into

---

[2]Hal C. Becker, Subliminal Communication and Hypnosis, a poster session presentation to the American Society of Clinical Hypnosis 25th Annual Scientific Meeting, October 24-30, 1982, Denver, CO.

BEST COPY AVAILABLE

subliminal stimulation as a catalyst engendering psychological reactions of subjects.

SUBLIMINAL STIMULATION AS A LEARNING FACILITATOR

Studies which have endorsed instruction with visual subliminals as stimuli are few. Kohlers presented both subliminal and incidental stimulation in problem-solving situations. He concluded that such stimulation alters subjects' perceptions of supraliminal messages as well as precipitating problem-solving.[3] No statistical evidence of subliminal stimulation altering students' responses to either paired word associates or to identification of geometric shapes was found by Vernon and Badger.[4] According to Sharp, the subliminal display of correct and incorrect answers to test questions did influence the written responses of subjects.[5] Oxhandler averred that the addition of a subliminal stimulus to a motion picture did alter students' responses.[6]

---

[3]Paul A. Kohlers, "Subliminal Stimulation in Simple and Complex Cognitive Processes," Dissertation Abstracts International, 33 (1972), 1269B (New York University).

[4]Jack A. Vernon and David H. Badger, "Subliminal Stimulation in Human Learning," American Journal of Psychology, 72:265-70, June, 1959.

[5]Heber C. Sharp, "Effect of Subliminal Cues on Test Results," Journal of Applied Psychology, 43:6:369-71, 1959.

[6]Eugene K. Oxhandler, "Can Subliminal Stimuli Teach?", Audio Visual Communications Review, 7:3:109-14, 1960.

BEST COPY AVAILABLE

Murch revealed evidence that stimulation affected subjects' performance in solving mathematical problems,[7] and Skinner reported improvement in the scores of ninth-grade vocabulary tests because of subliminal cueing added to a videotape presentation.[8] An attempt was made by Beisgen and Gibby to condition learners at a subliminal level by presenting 17 subjects with 10 nonsense syllables, of which five were paired with electrical shocks. They concluded that a subception effect was found and that such conditioning did affect learning.[9]

In Taris' research, fourth-grade subjects were divided into three groups to test the effects of teaching of a science lesson with subliminal stimulation. One group viewed a film with subliminal cues. A second group was presented the same film with supraliminal cues. The third group, which was the Control group, observed the film without additions. Post-stimulation testing revealed that it was doubtful that any subliminal learning had occurred.[10]

---

[7]Gerald M. Murch, "A Set of Conditions for a Consistent Recovery of Subliminal Stimulus," Journal of Applied Psychology, 49:4:257-60, 1965.

[8]William S. Skinner, Jr., "The Effect of Subliminal and Supraliminal Words Presented via Videotaped Motion Pictures on Vocabulary Development of Ninth-Grade Students," Dissertation Abstracts International, 30 (1969), 2430A (Arizona State University).

[9]Robert T. Beisgen, Jr. and Robert G. Gibby, Jr., "Autonomic and Verbal Discrimination of a Subliminally Learned Task," Perceptual and Motor Skills, 29:2:503-7, 1969.

[10]Louis J. Taris, "Subliminal Perception: An Experimental Study to Determine Whether a Science Concept Can Be Taught Subliminally to Fourth-Grade Pupils" (unpublished doctoral dissertation, Boston University, 1970), p. iv.

BEST COPY AVAILABLE

Leclerc and Freibergs presented to subjects subliminal stimuli that denoted either correct or incorrect solutions to the learning of a simple concept. They found that symbolic subliminal stimulation did suggest the influencing of learning.[11] DeChenne found that students at fifth-grade, ninth-grade, and college levels were not able to be taught a task via visual subliminal stimulation. The task involved both psychomotor and cognitive skills.[12]

FURTHER STUDIES OF THE EXISTENCE OF SUBLIMINAL PERCEPTION

Reese pointed out that despite the great effort made by Chun and Sarbin to make clear distinctions between pre-verbal and conscious differences included within the concept of galvanic skin responses as an indicator of subception, differences in subliminal perception and subception did exist. He stated that subliminal perception denoted a conscious subject response, while subception implied responses of the autonomic nervous system. Hence, subliminal perception employs discrimination without awareness, and subception is measured preconscious autonomic discrimination.[13]

---

[11]Claude LeClerc and Vaira Freibergs, "The Influence of Subliminal Perceptive and Symbolic Indices on the Formation of a Concept," Canadian Journal of Psychology, 25:292-301, August, 1971.

[12]James A. DeChenne, "An Experimental Study to Determine if a Task Involving Psychomotor and Problem Solving Skills Can Be Taught Subliminally" (unpublished doctoral dissertation, Virginia Polytechnic Institute and State University, 1976), p. 70.

[13]W. J. Reese, "On the Terms 'Subliminal Perception' and 'Subception,'" British Journal of Psychology, 62:501-4, November, 1971.

BEST COPY AVAILABLE

Harrison paired electrical shock with test words. The words paired with shock were recalled significantly more often than were words associated with the termination of the shocks. The study was replicated and the results were duplicated. Harrison pointed to these studies as evidence in favor of the perceptual-defense theory.[14]

Words were submitted by Watson to subjects for affective ranking. Of an original list of 160 words, the 10 words ranked most pleasant and the 10 ranked most unpleasant were subliminally presented. Subjects reacted most quickly to words of pleasant connotation.[15]

Somekh and Wilding utilized a binocular-rivalry situation to replicate the 1959 effort of Smith, Spence, and Klein. Images were presented subliminally by presenting a masking image to one eye, leaving one eye exposed to a weak image without the subject's awareness. Smith and his colleagues had found evidence that subliminally displayed, emotionally-related words could affect subjects' responses to a supraliminally presented neutral face. Of the 10 male and 10 female subjects, not one reported any knowledge of the existence of the subliminal stimuli.[16] Somekh and Wilding found evidence that stimuli presented at

---

[14]Robert H. Harrison, "Effect of Subliminal Shock Conditioning on Recall," Journal of Abnormal Psychology, 75:19-29, February, 1970.

[15]Georgia B. Watson, "Motor Response Latency as an Indicator of Subliminal Affective Stimulation," Journal of General Psychology, 82: 139-43, April, 1970.

[16]G. J. W. Smith, D. P. Spence, and G. S. Klein, "Subliminal Effects of Verbal Stimuli," Journal of Abnormal and Social Psychology, 59:2:167-76, 1959.

BEST COPY AVAILABLE

subliminal levels had an effect on subject responses at least as great as the same words presented supraliminally.[17]

The relationship of two stimuli presented in a binocular-rivalry condition was also the focus of research by Walker. Evidence showed that subliminal stimuli, even of the restrained eye, were sensitive to a moving stimulus. This was said to support the theory of the existence of two parallel visual systems.[18]

In an endeavor to review Blum's 1954 conclusion that perceptual-defense mechanisms operate just below the threshold level while vigilance conditions transpire at lower than threshold levels,[19] Jennings and George replicated the original effort of Blum. They found no evidence to support Blum's conclusions.[20] Blum replied that the Jennings-George replication differed in actual content of stimuli utilized and mechanics of presentation.[21]

---

[17]D. E. Somekh and J. N. Wilding, "Perception Without Awareness in a Dichoptic Viewing Situation," British Journal of Psychology, 64:3: 339-49 August, 1973.

[18]Peter Walker, "The Subliminal Perception of Movement and the Suppression in Binocular Rivalry," British Journal of Psychology, 66: 347-56, August, 1975.

[19]Gerald S. Blum, "An Experimental Reunion of Psychoanalytic Theory with Perceptual Vigilance and Defense," Journal of Abnormal and Social Psychology, 49:1:94-98, 1954.

[20]Luther B. Jennings and Stephen G. George, "Perceptual Vigilance and Defense Revisited: Evidence Against Blum's Psychoanalytic Theory of Subliminal Perception," Perceptual and Motor Skills, 41:723-29, December, 1975.

[21]Gerald S. Blum, "Reply to Jennings and George," Perceptual and Motor Skills, 41:957-58, December, 1975.

BEST COPY AVAILABLE

Barber and Ruston[22] replicated the efforts of Smith, Spence, and Klein[23] and those of Spence and Holland,[24] both with experimenters under blind and not-blind conditions. Only weak support for the existence of subliminal perception resulted, and a strong indication of the existence of experimenter bias was evident. Spence and Smith criticized the replication of the respective efforts because of the tendency of Barber and Ruston to reduce the sensitivity of measuring instruments.[25] Barber rebutted their reproval as speculation.[26]

COLOR AND LIGHT DETERMINATIONS

Severance and Dyer projected correct and incorrect color names just prior to color-recognition tests. There was no evidence that either correct or incorrect subliminally presented cues altered subjects' identification responses. Severance and Dyer concluded that

---

[22]Paul J. Barber and J. Philippe Ruston, "Experimenter Bias and Subliminal Perception," British Journal of Psychology, 66:357-72, August, 1975.

[23]Smith, Spence, and Klein, "Subliminal Effects of Verbal Stimuli," pp. 167-76.

[24]Donald P. Spence and Bert Holland, "The Restricting Effects of Awareness: A Paradox and an Explanation," Journal of Abnormal and Social Psychology, 64:3:163-74, 1977.

[25]Donald P. Spence and Gudmund J. Smith, "Experimenter Bias Against Subliminal Perception: Comments on a Replication," British Journal of Psychology, 68:279-80, August, 1977.

[26]Paul J. Barber, "Experimenter Bias Against Subliminal Perception? A Rejoinder," British Journal of Psychology, 68:281-82, August, 1977.

BEST COPY AVAILABLE

subliminal perception had not taken place and suggested that replication with subliminal cues of a more emotional nature would be useful.[27]

Anderson, Fries, and Smith found that subjects exposed to a subliminal threat had altered responses to a series of projected negative afterimages and to the aftereffects of a moving spiral.[28] The utilization of the optical interaction of two successive identical subliminal flashes in determining light-detection thresholds was documented by Herrick.[29]

The relationships of subliminal stimuli, brightness determinations, differences in defensive styles, and gender of subjects were studied by Wagstaff. In a replication and extension of Worthington's research, subjects made paired comparisons of identical lights superimposed with subliminal words. Worthington found that thematic content of subliminal words affects brightness measures. This was interpreted as suggesting perceptual defense.[30] Wagstaff found evidence that

---

[27]Laurence J. Severance and Frederick N. Dyer, "Failure of Subliminal Word Presentations to Generate Interference to Color Naming," Journal of Experimental Psychology, 101:186-89, November, 1973.

[28]Alf L. Anderson, Ingrid Fries, and Gudmund J. Smith, "Change in Afterimage and Spiral Aftereffect Serials Due to Anxiety Caused by Subliminal Threat," Scandinavian Journal of Psychology, 11:1:7-16, 1970.

[29]Robert M. Herrick, "Foveal Light-Detection Thresholds with Two Temporally Spaced Flashes: A Review," Perception and Psychophysics, 15: 361-67, April, 1974.

[30]A. G. Worthington, "Paired Comparison Scaling of Brightness Judgements: A Method for the Measurement of Perceptual Defence," British Journal of Psychology, 60:3:363-68, 1969.

BEST COPY AVAILABLE

significant relationships did exist among emotionality of thematic content of stimuli, sex of subjects, and personality types.[31]

Hull explored the performances of nonpsychiatric and schizophrenic subjects. Among the variables tested was that of subliminal tachistoscopically presented color registrations. A significantly greater ability to employ subliminal registrations was found among nonpsychiatric patients than among the schizophrenic population. Hull concluded that these results would serve as one available index into the dysfunctioning of schizophrenics.[32]

CREATIVITY-RELATED STUDIES

The effects of subliminal sexual and aggressive stimuli upon creative and uncreative subjects were examined by Antell. Both of these thematic contents of stimulation improved creativity scores in both groups, with a greater effect seen in the sexual condition. In a metaphor-generating task, the sexual stimulation was found to have a less disruptive effect than did the aggressive stimuli. Consequently, Antell concluded that subliminal drive-related stimulation can accent as

---

[31]Graham F. Wagstaff, "The Effects of Repression-Sensitization on a Brightness Scaling Measure of Perceptual Defence," British Journal of Psychology, 65:395-401, August, 1974.

[32]Ethel I. Hull, "Ego States Characteristic of Enhanced Utilization of Subliminal Registrations," Dissertation Abstracts International, 37 (1976), 1903B (University of Chicago).

BEST COPY AVAILABLE

well as restrict creativity, depending upon the subject and thematic content of stimulation.[33]

Erdelyi explored the relationship of fantasy doodles to the recovering of elements of a subliminally presented stimulus. A fantasy group was made to compose pictorial fantasies. Guessing subjects were made to guess missed elements. A yoked group was then made to guess the missed elements by viewing the fantasy group's doodles. The guessing subjects recovered significantly more stimulus elements than did the fantasy subjects, while the yoked subjects' responses were significantly less accurate than were the fantasy subjects' responses.[34]

Fifteen creative and 15 artistically constricted subjects were utilized in Katz's research. These subjects were subliminally stimulated and directed to write a story. The hypothesis that the creative group would produce more stimulus-related reproductions and responses was supported.[35]

---

[33]Maxine J. Antell, "The Effects of Priming and Subliminal Presentation of Sexual and Aggressive Stimuli on Tests of Creativity," Dissertation Abstracts International, 30 (1969), 3859B (New York University).

[34]Matthew H. Erdelyi, "Role of Fantasy in the Poetzl (Emergence) Phenomenon," Journal of Personality and Social Psychology, 24:2:186-90, 1972.

[35]Robert J. Katz, "Subliminal Perceptions and Creative Preconscious," Dissertation Abstracts International, 34 (1973), 1751B (Texas Tech University).

BEST COPY AVAILABLE

Jeffmar tested the relationship of personality traits and approaches to picture completion to subjects' impressionableness to stimulation. Twenty-eight adult subjects were exposed to five subthreshold verbal stimuli. Two variables--subjects' character and techniques of picture completion--were related to subjects' individual propensities to subliminal stimulation.[36]

The work of Eagle, Wolitzky, and Klein in exploring the effects of embedding an image within a stimulus[37] was reviewed by Somekh. Somekh had students to write stories after stimulation by a letter matrix that included either neutral or emotion-related words. Two groups were administered this test at supraliminal levels, and four groups received subliminal stimulations. In line with findings by Eagle and his colleagues, judges found a significant degree of word-content influence in subliminal groups but not in supraliminal groups. Also, more unpleasant words were found in emotion-related subliminal groups than in neutral groups.[38]

Veeder presented low-light pictorial and word stimulations as added elements to two short films. Audience responses were then measured. Differences in subject responses to characters in the films

---

[36]Marianne Jeffmar, "Ways of Cognitive Action: A Study of Syncretism, Flexibility, and Exactness," Psychological Research Bulletin, 16:1:47, 1976.

[37]Morris N. Eagle, David L. Wolitzky, and George S. Klein, "Imagery: Effect of a Concealed Figure in a Stimulus," Science, 151:837-39, February, 1966.

[38]David E. Somekh, "The Effect of Embedded Words in a Brief Visual Display," British Journal of Psychology, 6:529-35, November, 1976.

BEST COPY AVAILABLE

were found and attributed to the added elements, particularly those of a sexual nature. Veeder suggested that subliminally exhibited pictures intensified audience responses, while the word cueing clarified or further defined aroused feelings.[39]

DREAM-RELATED RESEARCH

Kaley researched subjects' waking and dream-related responses to subliminal stimulation. Drive (dependent) subjects were primed with interviews that stressed their own dependence. Nondrive subjects were not interviewed. Half of each group was stimulated subliminally, while the other half received a control stimulus. Differences were found both in posttesting and in subsequent dream-related measures, but the expected subliminal effects that nondrive subjects would react more directly in performance on waking tasks while the drive group would react in dream transformations were not evident.[40]

Subjects were exposed to subliminal pictures of animals in research conducted by George and Jennings. An account of subjects' dreams was recorded. No evidence was found to support a theory of

---

[39]Gerry E. K. Veeder, "The Influence of Subliminal Suggestion on the Response to Two Films" (unpublished doctoral dissertation, Wayne State University, 1975), p. 14.

[40]Harriette W. Kaley, "The Effects of Subliminal Stimuli and Drive on Verbal Responses and Dreams," Dissertation Abstracts International, 31 (1970), 2284B (New York University).

BEST COPY AVAILABLE

subliminal stimulation as a catalyst of unconscious effects.[41] The researchers found this to be in contrast with the conclusions of Spence and Holland as outlined in a review of Spence and associates' studies.[42] In contrast, Friedman reported evidence that daytime perceptual registration outside of awareness effected ensuing dream repercussions.[43]

SUBLIMINALS AND CONSUMER BEHAVIOR

Hawkins utilized a tachistoscope to explore the possibility of activating thirst drives in subjects. He compared the effects of a simple drive-related verbal stimulus, a more complicated drive-related imperative stimulus, and a control. He found evidence that the drive-related stimulus did raise thirst measures. The more complex stimulus did not increase the subliminal influence. In a second experiment, Hawkins subliminally prescribed a letter denoting a brand of perfume upon the picture of a semi-nude woman. When 20 male subjects were asked to decide which brand of perfume a sexy date would use, there was no

---

[41]Stephen G. George and Luther B. Jennings, "Effects of Subliminal Stimuli on Dreams: Further Evidence Against the Spence-Holland Theory," Perceptual and Motor Skills, 35:251-57, August, 1972.

[42]Donald P. Spence and Carol M. Gordon, "Activation and Assessment of an Early Oral Fantasy: An Exploratory Study," Psychological Issues, 8:2:11-28, 1973.

[43]Stanley Friedman, "Perceptual Registration of the Analyst Outside of Awareness," Psychoanalytic Quarterly, 76:1:128-30, 1976.

BEST COPY AVAILABLE

evidence of stimulation influence. Ten females were similarly tested, and the same result was indicated.[44]

Subject's responses to an alcohol-related questionnaire were compared by Hart. An Experimental group was subjected to an unpleasant tachistoscopic presentation of a slide of a whiskey bottle with the word "poison" inscribed upon it during five sessions. Although 50 volunteers were employed in the original study, only 14 subjects in the Control group and six in the Experimental group completed the entire process. The conclusion was that the stimulation given to the Experimental group altered their attitudes toward alcohol and alcoholism.[45]

George and Jennings secretly presented the words "Hershey's Chocolate" to students who were viewing a slide presentation as part of a regularly scheduled classroom activity. No evidence that motivational effect contributed to the stimulus on subjects' buying patterns was found.[46]

---

[44]Del Hawkins, "The Effects of Subliminal Stimulation on Drive Level and Brand Preference," Journal of Marketing Research, 7:322-26, August, 1970.

[45]Larry Hart, "The Effect of Noxious Subliminal Stimuli on the Modification of Attitudes Toward Alcoholism: A Pilot Study," British Journal of Addiction, 68:87-90, June, 1973.

[46]Stephen G. George and Luther B. Jennings, "Effects of Subliminal Stimuli on Consumer Behavior: Negative Evidence," Perceptual and Motor Skills, 41:3:847-54, 1975.

BEST COPY AVAILABLE

STUDIES UTILIZING NONVERBAL MEASURES

Pictorial subliminal stimulation was presented to 25 female subjects by Rudolph, who then measured for overt response, capillary pulse pressures, pulse rates, and response latency and duration. Subjects' measurements for stimuli exposure at supraliminal and subliminal durations were determined. Rudolph concluded that physiological reactions were motivated by visual stimulation. Also, the suggestion was made that such an approach to learning theory and succeeding instructional design were in order to resolve the need of specific predictors of student responses to stimulation.[47]

Kleespies and Wierner researched the eye movements of 15 male and 15 female subjects to determine response differences due to thematic content, stimulus structure, or exposure levels. Subject reports and eye-orienting reflexes showed no significant differences in tested categories.[48]

The effects of pictorial stimulation on skin were investigated by O'Grady. Thresholds were determined individually for 12 male and 12 female subjects. When the 14 subliminal stimuli were tachistoscopically

---

[47]James R. Rudolph, "Selective Subliminal Perception Relative to Approach/Avoidance Tendencies," Dissertation Abstracts International, 31 (1970), 1695A (University of Southern California).

[48]Phillip Kleespies and Morton Wierner, "The Orienting Reflex as an Input Indicator in Subliminal Perception," Perceptual and Motor Skills, 35:1:103-10, 1972.

BEST COPY AVAILABLE

presented, the mean measures for the seven taboo pictures were significantly larger than those for the neutral stimuli.[49]

Shevrin, Smith, and Fritzler employed the technique of average evoked response to electroencephalograph/tape recorder readings to explore the effects of subliminal stimulation upon pairs of twins being tested for repressiveness.[50] This technique had been found to be operable in discriminating between two tachistoscopically displayed stimuli[51] and was serviceable as an instrument in studies of repression is a factor in evoked response readings and word associations.[52] As was the tendency in the previous testing, average evoked responses were negatively correlated with repressiveness. Shevrin, Smith, and Fritzler then tested 12 pairs of twins with two tachistoscopically exhibited stimuli and again found evidence that the average evoked response technique could discriminate between visual subliminal stimuli.[53]

---

[49]Michael O'Grady, "Effect of Subliminal Pictorial Stimulation on Skin Resistance," Perceptual and Motor Skills, 45:3:1051-56, 1977.

[50]Howard Shevrin, William H. Smith, and Dean E. Fritzler, "Subliminally Stimulated Brain and Verbal Responses of Twins Differing in Repressivenesss," Journal of Abnormal Psychology, 76:1:39-46, 1970.

[51]Howard Shevrin and Dean E. Fritzler, "Visual Evoked Response Correlates of Unconscious Mental Processes," Science, 161:295-98, July, 1968.

[52]Howard Shevrin, William H. Smith, and Dean E. Fritzler, "Repressiveness as a Factor in the Subliminal Activation of Brain and Verbal Responses," Journal of Nervous and Mental Disease, 149:3:261-69, 1969.

[53]Howard Shevrin, William H. Smith, and Dean E. Fritzler, "Average Evoked Response and Verbal Correlates of Unconscious Mental Processes," Psychophysiology, 8:149-62, March, 1971.

BEST COPY AVAILABLE

Shevrin reviewed and synthesized these studies in light of the cortical-response theory.[54]

The efforts of Shevrin and associates were replicated by Schwartz and Rem. Subjects detected the presence of the two varying tachistoscopically presented subliminal stimuli but could not discriminate between them except in those cases in which the exposure duration was increased. No evidence that measures of average evoked response altered with changes of stimulus was generated.[55] The reply of Shevrin to the study of Schwartz paired stimuli were factors in their conflicting results. He also found that average evoked response cross-correlations between different similar stimuli could be interpreted as partial confirmation of his efforts.[56] Schwartz answered Shevrin's finding by stating that a reanalysis of data according to Shevrin's guidelines renewed the finding that there was no evidence that average evoked responses discriminate between stimuli.[57]

---

[54]Howard Shevrin, "Brain Wave Correlates of Subliminal Stimulation, Unconscious Attention, Primary-and-Secondary Process Thinking, and Repressiveness," Psychological Issues, 8:2:56-87, 1973.

[55]Marvin Schwartz and Michael A. Rem, "Does the Average Evoked Response Encode Subliminal Perception?", Psychophysiology, 12:390-94, July, 1975.

[56]Howard Shevrin, "Does the Average Evoked Response Encode Subliminal Perception? Yes. A Reply to Schwartz and Rem," Psychophysiology, 12:395-98, July, 1975.

[57]Marvin Schwartz, "On Testing Specific Hypotheses About Subliminal Perception: A Reply to Shevrin," Psychophysiology, 13:27-31, January, 1976.

BEST COPY AVAILABLE

HEMISPHERIC CONDITIONS

Foodman presented right-handed subjects verbally meaningful and unmeaningful stimuli under subliminal and supraliminal conditions. Average evoked responses were recorded. Cerebral hemispheric asymmetry at the unconscious level was reported.[58]

The relationship of individual subject differences in hemisphericity and cognitive set of stimuli was researched by Sackeim, Packer, and Gur. Twenty-four right-oriented and 25 left-oriented male subjects responded to subliminal stimuli under both organized and unorganized cognitive-set situations. Results indicated that left movers showed subliminal effect in the unorganized condition but none in the organized condition, while right movers showed subliminal effect in the organized condition.[59]

SUBLIMINAL PERCEPTION AND UNCONSCIOUS CONFLICT

The work of Spence and Holland was reviewed by Jennings and George in an effort to reconsider the concept of subliminal perception as a perpetrator of psychological reaction in subjects. Spence and

---

[58]Allan Foodman, "Hemispheric Asymmetrical Brain Wave Indicators of Unconscious Mental Processes," Journal of Operational Psychiatry, 7:1:3-15, 1976.

[59]Harold A. Sackeim, Ira K. Packer, and Ruben C. Gur, "Hemisphericity, Cognitive Set, and Susceptibility to Subliminal Perception," Journal of Abnormal Psychology, 6:624-30, 1977.

BEST COPY AVAILABLE

Holland reported that the verbal stimulus "cheese" affected the retention of word associates. Subjects were presented stimuli at just above and just below threshold levels.[60] Jennings and George found no evidence of replication of the psychological activation effect noted in the conclusions of Spence and Holland.[61] Again, George and Jennings re-examined the Spence-and-Holland findings. Spence and Holland had concluded that the word "cheese" tachistoscopically presented 30 times would increase the hunger ratings of subjects. Subjects were again tested at just above and just below threshold levels. No increase in hunger ratings was discovered in the research by George and Jennings.[62]

Holtzman investigated the relationship of subject's oral drives and subliminal or supraliminal stimulation. Subjects were rated on orality scales and made to feel rejected or accepted on performance on subsequent testing. There was a significant relationship found between the stimuli utilized and the kinds of words reported from the memory list. Those subjects subliminally stimulated recalled significantly

---

[60]Spence and Holland, "The Restricting Effects of Awareness: A Paradox and an Explanation," p. 173.

[61]Luther B. Jennings and Stephen G. George, "The Spence-Holland Theory of Subliminal Perception: A Re-examination," Psychological Record, 20:495-504, Fall, 1970.

[62]Stephen G. George and Luther B. Jennings, "Re-examination of the Effect of Subliminal Verbal Food Stimulus on Subjective Hunger Ratings," Psychological Reports, 30:2:521-22, 1972.

BEST COPY AVAILABLE

more words related to infantile-nursing situations than to other situations.[63]

Silverman headed a lengthy series of studies utilizing his technique in exposing drive-related subliminal stimulation as a source for activating unconscious conflict. These studies have been reviewed by Silverman in several comprehensive recapitulations.[64] Also, in "Psychoanalytic Theory: 'The Reports of My Death Are Greatly Exaggerated,'" Silverman addressed the results of his and related studies in hypnotic suggestion.[65]

Silverman's work, due to its many replications, is apparent proof of the effects of drive-related stimulation upon measurable

---

[63]Deanna Holtzman, "Recall and Importation on a Word Test Primed by a Subliminal Stimulus," Dissertation Abstracts International, 36 (1975), 2473B (Wayne State University).

[64]Lloyd H. Silverman, "An Experimental Technique for the Study of Unconscious Conflict," British Journal of Medical Psychology, 44:17-25, March, 1971; Lloyd H. Silverman, "On the Role of Laboratory Experiments in the Development of the Clinical Theory of Psychoanalysis: Data on the Subliminal Activation of Aggressive and Merging Wishes in Schizophrenics," International Review of Psycho-analysis, 2:1:43-64, 1975; Lloyd H. Silverman, "Drive Stimulation and Psychopathology: On the Conditions Under Which Drive-Related External Events Evoke Pathological Reactions," Psychoanalysis and Contemporary Science, 72:1:306-26, 1972; Lloyd H. Silverman, Abbot Bronstein, and Eric Mendelsohn, "The Further Use of Subliminal Psychodynamic Activation Method for the Experimental Study of the Clinical Theory of Psychoanalysis: On the Specificity of the Relationship Between Symptoms and Unconscious Conflicts," Psychotherapy: Theory, Research, and Practice, 13:1:2-16, 1976; Lloyd H. Silverman and others, "A Clinical Application of Subliminal Psychodynamic Activation: On the Stimulation of Symbiotic Fantasies as an Adjunct in the Treatment of Hospitalized Schizophrenics," Journal of Nervous and Mental Disease, 161:6:379-92, 1975.

[65]Lloyd H. Silverman, "Psychoanalytic Theory: 'The Reports of My Death Are Greatly Exaggerated,'" American Psychologist, 31:621-37, September, 1976.

BEST COPY AVAILABLE

reactions of subjects. Simply stated, his technique presents subjects with a variety of stimuli and control and experimental conditions, with each subject serving as his own control and baseline. Measures are taken of each subject's reactions, and data are treated statistically. Overall evidence showed that pathological reactions derived from drive-related stimuli were not evident in neutral or supraliminal conditions.

In a series of studies utlizing schizophrenics, aggression-related stimuli were found to exacerbate pathological reactions with astounding consistency. These studies provide necessary background to the Silverman technique. Typical studies within this group include the Silverman and Silverman study, which utilized 60 males and stimuli in five different exposures. There was a total subliminal effect for all groups which differed by thematic contents of stimuli and exposures.[66]

Silverman found that aggression-related stimulation brought some significant manifestations of pathological aggravation in the testing of 32 male schizophrenics.[67] Silverman and Silverman tested 30

---

[66]Lloyd H. Silverman and Doris K. Silverman, "A Clinical-Experimental Approach to the Study of Subliminal Stimulation: The Effects of a Drive-Related Stimulus Upon Rorschach Responses," Journal of Abnormal and Social Psychology, 69:2:156-72, 1964.

[67]Lloyd H. Silverman, "A Technique for the Study of Psychodynamic Relationships: The Effects of Subliminally Presented Aggressive Stimuli on the Production of Pathological Thinking in a Schizophrenic Population," Journal of Consulting Psychology, 30:2:103-11, 1966.

BEST COPY AVAILABLE

hospitalized schizophrenics and found that drive-related stimulation excited ego impairment as measured by arithmetic tests and picture arrangement.[68]

Furthermore, Silverman and Spiro found evidence of subliminal irritation when they tested hospitalized male schizophrenics with tests of recall. They also found projections of aggression as related to aggressive stimuli.[69] Spiro and Silverman tested 36 male schizophrenics on self-awareness. Aggressive stimulation caused an intensification of pathological thinking and reduced memory accuracy on story-recall tests.[70]

In research by Silverman and others, subliminal aggressive stimulation exaggerated pathological reactions in a schizophrenic population. Subliminal libidinal stimulation did not activate pathology but revealed a trend toward reducing pathological thinking.[71] Silverman

---

[68]Lloyd H. Silverman and Stephen E. Silverman, "The Effects of Subliminally Presented Drive Stimuli on the Cognitive Functioning of Schizophrenics," Journal of Projective Techniques and Personality Assessment, 31:78-85, February, 1967.

[69]Lloyd H. Silverman and Robert H. Spiro, "The Effects of Subliminal, Supraliminal, and Vocalized Aggression on the Ego Functioning of Schizophrenics," Journal of Nervous and Mental Disease, 146:1:50-61, 1968; Lloyd H. Silverman and Robert H. Spiro, "Further Investigations of the Effects of Subliminal Aggressive Stimulation on the Ego Functioning of Schizophrenics," Journal of Consulting Psychology, 31:3:225-32, 1967.

[70]Robert H. Spiro and Lloyd H. Silverman, "Effects of Body Awareness and Aggressive Activation on Ego Functioning of Schizophrenics," Perceptual and Motor Skills, 28:575-85, April, 1969.

[71]Lloyd H. Silverman and others, "The Effects of Aggressive Activation and the Need to Merge on Pathological Thinking in Schizophrenia," Journal of Nervous and Mental Disease, 148:1:39-51, 1969.

BEST COPY AVAILABLE

reviewed the effects of aggressive, libidinal, homosexual, and neutral stimuli on the performance testing of schizophrenics. Such stimulation was found to irritate and amplify ego damage.[72]

Differentiated schizophrenics were tested by Silverman and Candell with aggression-related and symbiotic-union subliminals. The researchers found effect in both subliminal situations.[73] Also, Silverman found evidence of a similar but less intense effect of such stimulation upon nonschizophrenic populations.[74] This finding was duplicated in research by Silverman and Goldweber.[75]

With Silverman's technique so tested, Silverman and others tested 24 male adolescent stutterers. The stutterers paraphrased the meanings of passages read to them and provided stories of pictorial scenes. As predicted, more stuttering was present in periods following aggressive stimulation than in control situations.[76]

---

[72]Stephen E. Silverman, "The Effects of Subliminally Induced Drive Derivations on Ego Functioning in Schizophrenics," Dissertation Abstracts International, 31 (1970), 2291B (New York University).

[73]Lloyd H. Silverman and Peter Candell, "On the Relationship Between Aggressive Activation, Symbiotic Merging, Intactness of Body Boundaries, and Manifest Pathology in Schizophrenics," Journal of Nervous and Mental Disease, 150:5:387-89, 1970.

[74]Lloyd H. Silverman, "Study of the Effects of Subliminally Presented Aggressive Stimuli on the Production of Pathological Thinking in a Nonpsychiatric Population," Journal of Nervous and Mental Disease, 131:4:443-55, 1966.

[75]Lloyd H. Silverman and Arthur M. Goldweber, "A Further Study of the Effects of Subliminal Aggressive Stimulation on Thinking," Journal of Nervous and Mental Disease, 143:463-72, December, 1966.

[76]Lloyd H. Silverman and others, "The Effects of Subliminal Drive Stimulation on the Speech of Stutterers," Journal of Nervous and Mental Disease, 155:1:14-21, 1972.

BEST COPY AVAILABLE

The often-verified Silverman technique was replicated by Lomangino, who found that oral-aggressive verbal and pictorial stimuli did activate pathological reactions in schizophrenics.[77] An investigation into the effects of aggressive stimulation upon patients with a history of suicidal tendencies was conducted by Rutstein and Goldberg. Sixty-four female psychiatric patients were utilized as subjects. Thirty-two of the subjects had made suicidal attempts. Subjects were observed in four experimental Silverman-type meetings, in which subjects were administered subliminal aggressive (subliminal gratification), control, and supraliminal aggressive stimuli. Suicidal patients did show significantly more evidence of proposed depression after the presentation of subliminal aggressive stimuli than after both the control and supraliminal aggressive stimuli.[78]

Under Silverman's direction, Leiter grouped schizophrenics for differentiation qualities. Aggressive stimulation was found to increase pathology. Symbiotic messages were found to soothe pathology in undifferentiated subjects but to increase pathology in differentiated

---

[77]Louis F. Lomangino, "Depiction of Subliminally and Supraliminally Presented Aggressive Stimuli and Its [Their] Effects on the Cognitive Functioning of Schizophrenics," Dissertation Abstracts International, 30 (1969), 1900B (Fordham University).

[78]Eleanor H. Rutstein and Leo Goldberg, "The Effects of Aggressive Stimulation on Suicidal Patients: An Experimental Study of the Psychoanalytic Theory of Suicide," Psychoanalysis and Contemporary Science, 2:157-74, 1973.

BEST COPY AVAILABLE

subjects.[79] Litwack found amplified pathological reactions to aggressive object-loss stimulation.[80]

Varga presented captioned pictorial stimulation related to aggression, loss, oral gratification, and a control to undergraduate subjects after they were primed with a passage dealing with the death of a mother. Varga hypothesized that each stimulus would alter subjects' reactions to subsequent testing. Differences in responses led to the conclusion that mood alteration had occurred with all stimuli, and a significant degree of alteration was apparent with the aggressive stimuli.[81]

The effects of aggressive and nonaggressive subliminal arousal on sentence recognition was explored by Candela. Ninety female subjects were divided into 45 repressors and 45 sensitizers. Subjects read a prose passage and were exposed to aggressive, nonaggressive, or control stimuli. Memory disruption was found to be dependent upon the subjects' style of defense and upon content of stimuli.[82]

---

[79]Eli Leiter, "A Study of the Effects of Subliminal Activation of Merging Fantasies in Differentiated and Non-Differentiated Schizophrenics," Dissertation Abstracts International, 34 (1973), 4022B (New York University).

[80]Thomas R. Litwack, "A Study of Certain Issues Concerning the Dynamics of Thinking and Behavioral Pathology in Schizophrenics Through the Use of Subliminal Stimulation," Dissertation Abstracts International, 33 (1972), 918B (New York University).

[81]Michael P. Varga, "An Experimental Study of Aspects of the Psychoanalytic Study of Elation," Dissertation Abstracts International, 34 (1973), 4062B (New York University).

[82]Anthony J. Candela, "Memory as a Function of Defensive Style and Type of Aggressive Stimuli" (unpublished doctoral dissertation, New York University, 1975), pp. 1-3.

BEST COPY AVAILABLE

Cox investigated the effects of subliminal aggressive stimulation upon symptoms of depression in psychotic and nonpsychotic hospitalized patients. Each person was tested for mood level, self-esteem, and aggressive and supraliminal control conditions. Psychotic patients revealed a tendency to drop self-esteem levels following aggressive subliminal stimulation and to increase self-directed aggressions. Cox suggested that the results lent support to theories that self-directed aggressions are linked to depression.[83]

In research conducted by Kaye, 96 schizophrenics were presented with three verbal stimuli designed to aggravate fantasies of merging with a mother, father, or young lady. The mother-related stimulus was found to reduce nonverbal pathology. The message related to a young lady affected both nonverbal and regressive thinking. The father-related image had no effect.[84]

Lieberman presented aggressive and passive stimuli to subjects at various exposures. Subjects were ranked by threshold levels, personality types, and defensive styles. Lieberman concluded that exposure levels determined response reactions.[85]

---

[83]Louis D. Cox, "Depressive Symptoms as Affected by Aggressive Stimuli Subliminally and Supraliminally Presented," Dissertation Abstracts International, 35 (1974), 1402B (Fordham University).

[84]Melvin M. Kaye, "The Therapeutic Value of Three Merging Stimuli for Male Schizophrenics," Dissertation Abstracts International, 36 (1975), 1438B (Yeshiva University).

[85]Harvey J. Lieberman, "A Study of the Relationship Between Developmentally Determined Personality and Associated Thought Styles and Tachistoscopic Exposure Time as Reflected in Conflict Resolution," Dissertation Abstracts International, 35 (1974), 5670B (Pennsylvania State University).

BEST COPY AVAILABLE

Subliminal stimulation condition was more potent than subliminal stimulation following a supraliminal display when Martin tested 45 obese women with regard to the reduction of eating and weight loss. Fifteen subjects were tachistoscopically presented symbiotic-gratification stimuli and weight-loss instructions for a period of eight weeks. Fifteen were presented with an object-loss stimulus. Martin hypothesized that the subjects exposed to the symbiotic message would lose more weight than would the neutral group. Weight loss after a follow-up session showed a significantly greater weight loss in symbiotically stimulated subjects than in control subjects. Subjects stimulated with object-loss content showed no such effect.[86]

Spiro researched the effects of subliminal symbiotic stimulation and self-focusing counseling on the pathological response of schizophrenics. The symbiotic exposure reduced pathology in the differentiated subjects but not in the undifferentiated subjects. Self-focusing intervention was shown to have little effect.[87]

Symbiotic fantasies as a therapeutic vehicle to ease schizophrenics were further explored by Kaplan. Four stimulus groups received various mother-related stimuli that verbally stated symbiotic gratification, oral gratification, protection against aggression, and assurance

---

[86]April Martin, "The Effect of Subliminal Stimulation of Symbiotic Fantasies on Weight Loss in Obese Women Receiving Behavioral Treatment" (unpublished doctoral dissertation, New York University, 1975), pp. 34-39.

[87]Tova W. Spiro, "The Effects of Subliminal Symbiotic Stimulation and Strengthening Self Boundaries of Schizophrenic Pathology," Dissertation Abstracts International, 36 (1975), 5818B (New York University).

BEST COPY AVAILABLE

that was related to a mother's presence. All received a control message. The symbiotic message was the only thematic content found to reduce pathology.[88]

Bronstein tested six groups of 30 differentiated schizophrenics. Each received control as experimental stimuli of symbiosis with mother. The administrator of the test was female. Also, subjects were presented stimuli by a male administrator. The symbiotic stimuli were found to have an effect on pathology. The sex of the experimenter was found to have no effect on the results.[89]

Silverman's methodology was utilized by Cohen to explore the effects of various merging stimuli on differentiated female schizophrenics. Half of the subjects received verbal stimulation, and half received both verbal and pictorial stimulation. After stimulation, assessments were made of thought disorders and nonverbal pathology. Cohen concluded that merging stimuli could reduce pathology in female schizophrenics.[90] Greenberg, on the other hand, tested 24 schizophrenic subjects and found an increase in pathological thinking only with a

---

[88]Rosalind B. Kaplan, "The Symbiotic Fantasy as a Therapeutic Agent: An Experimental Comparison of the Effects of Three Symbiotic Elements on Manifest Pathology in Schizophrenics," Dissertation Abstracts International, 37 (1976), 1437B (New York University).

[89]Abbot A. Bronstein, "An Experimental Study of Internalization Fantasies in Schizophrenic Men," Dissertation Abstracts International, 37 (1976), 4665B (Yeshiva University).

[90]Roni O. Cohen, "The Effects of Four Subliminally-Introduced Merging Stimuli on the Psychopathology of Schizophrenic Women," Dissertation Abstracts International, 38 (1977), 2356B (Columbia University).

BEST COPY AVAILABLE

neutral stimulus.[91] This, of course, was in direct conflict with Silverman's many aggression-related studies.

SUMMARY

The review of visual subliminal literature in this chapter had as its purpose the synthesis of literature published since 1970. As this was a study of subliminal effect within the classroom, those studies available that utilized subliminals as facilitators of information for educational purposes have been summarized. Studies that investigated the existence of subliminal perception have been presented because they served to update the information presented in Chapter 1.

---

[91]Nathan Greenberg, "The Effects of Subliminal Neutral and Aggressive Stimuli on the Thought Processes of Schizophrenics," Canadian Journal of Behavioural Science, 9:187-96, April, 1977.

BEST COPY AVAILABLE

Chapter 3

RESEARCH METHODOLOGY

The purpose of this chapter is to present the research methodology. The chapter is designed to present dependent and independent variables and to describe the procedure utilized in determining the variables to be used; to discuss the nature, validity and administration of the instrument used to collect the data; also, how the stimulus was chosen and presented to the subject is included.

DETERMINATION OF VARIABLES

The primary purpose of the study was to determine if the subjects' self-esteem could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the medium of a specially prepared paper. Other purposes included determining if any statistically significant differences existed between the effect on their self-esteem of a selected stimulus presented below the threshold of conscious awareness of selected mainstream students and of target students.

Independent Variables

Thus, the independent variable was preconscious cues placed upon specially prepared paper. The paper, which contained the symbolic

BEST COPY AVAILABLE

and linguistic cues, was white, flat-finished bond paper (see Appendix B). The paper was processed by Suppa Corporation, Fallbrook, California, and is marketed under the name Super-Paper (TM). Weinsten et al.,[1] conducted a study of the effects of advertising on Super-Paper on brain response, purchase intention, and simulated purchase. The results of that study supported the hypothesis that Super-Paper can be influential in enhancing some advertisements as reflected in brain activation, participant rating, and purchase simulation. No other research had been conducted to test the effectiveness of the paper. Its effectiveness, at that time, was theoretical.

The paper for this study was custom-made. It contained visual and linguistic cues designed by the researchers to evoke an increase in self-esteem on the part of the subjects. The linguistic cue was the phrase "I LOVE YOU" placed in the upper right quadrant of the paper. The upper left quadrant of the paper contained a visual symbol of a Valentine heart. The letters were 1 inch high and the Valentine heart was 6 inches high (see Appendix A). The paper was treated both back and front so that regardless of how the subjects held the paper, they had the same messages in book order. With careful and extensive examination some observers (not participants in the present investigation) could see the cues (when given prompting) which were sometimes described as looking like watermarks. However, the amount of active time in scrutinizing required before the observers located the cues was much longer than the

---

[1]Weinstein, S., C. Weinstein, and Drozdenko, Advertising on Super-Paper: Effect Upon Brain Response, Purchase Intention, and Simulated Purchase.

BEST COPY AVAILABLE

time of exposure allowed in present experimental design. Too, the subjects in the experiment were not given prompts to locate the cues. Thus, operationally, these cues were subliminal within the parameters used in this study.

Participants

Ninety subjects were selected for the study. Fifty-two of the subjects were considered to be making acceptable academic and social growth and were considered to be mainstream students. Thirty-eight of the subjects were having difficulty in either or both areas of academics and socialization. All 38 of of these subjects, who were considered to be target students, were considered to be capable of achieving at the mainstream level but, for undocumented reasons, were not. The mainstream subjects and the target subjects were then randomly assigned to one of two groups: Experimental and Control. The Experimental groups responded to the items on the Rosenberg Self-Esteem Scale which was printed on the test paper which contained the preconscious cue. The Control group responded to the Rosenberg Self-Esteem Scale which was printed on flat-finish, white bond paper with no preconscious cues.

Dependent Variable

The dependent variable was the subjects' self-esteem as measured by the Rosenberg Self-Esteem Scale.

NATIVE VALIDITY AND ADMINISTRATION OF THE INSTRUMENT

The Rosenberg Self-Esteem Scale measures the self-esteem of individuals and was originally developed for use with high school

BEST COPY AVAILABLE

students. Since the scale was designed specifically with brevity and ease of interaction in mind, it has often been used with good results with junior high school students.[2] The scale consists of 10 items answered on a four point scale from strongly agree to strongly disagree. A total of 5,024 high school students from randomly selected schools made up the main sample reported by Rosenberg. A Guttman scale reproducibility coefficient of .92 was obtained, and Silber and Tippett found that the scale had a test-retest correlation over 2 weeks of .85.

Convergent Validity. Silber and Tippett (1965) found that the scale correlated from .56 to .83 with several other similar measures and clinical assessment.

Discriminant Validity. Correlations with measures of self-stability were substantial (.21 to .53) but it is suggested that some covariance would be expected. Correlations with (1) stability of ratings of other, and (2) stability of perceptual performance were close to zero.[3]

Predictive Validity. Rosenberg presents considerable data about the content validity of both this measure and self-esteem in general. He relates positive self-esteem to many social and interpersonal consequences such as less shyness and depression, more assertiveness, and more extracurricular activities.

---

[2]M. Rosenberg. Society and the Adolescent Self-Image, Princeton, NJ: Princeton University Press, 1965.

[3]Jean Tippett and E. Silber, "Self-image Stability: The Problem of Validation," Psychological Reports, 1965, 17, 323-329.

BEST COPY AVAILABLE

RESEARCH DESIGN

The Research design used for the study was a variation of the Solomon Four-Group Design. Its form is as follows:

R	x	O_1
R		O_2
R	x	O_3
R		O_4

The treatment was administered and the data were collected and analyzed. The main hypothesis was tested using an ANOVA. If the null hypothesis was rejected, a t-test was administered to determine between groups statistical significance, and the sub-hypotheses were tested for acceptance or rejection of the null form. The alpha level .05 was chosen to represent statistical significance.

BEST COPY AVAILABLE

Chapter 4

RESULTS AND ANALYSES OF DATA

The primary purpose of the study was to determine if the subjects self-esteem could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the media of a specially prepared paper. Other purposes included determining if any statistically significant differences existed between the effects on their self-esteem of a selected stimulus presented below the threshold of conscious awareness of mainstream students and of target students. The presentation of the stimulus was made via the medium of specially treated flat-finish bond paper which contained the subliminal message. The paper, known and marketed as Super-Paper (TM) was custom-designed and produced for this study by Suppa Corporation, Fallbrook, California.

Subjects were selected and assigned to one of two groups. One group was comprised of middle school students who were making satisfactory academic and social progress. The other group was comprised of selected middle school students who were not making satisfactory academic or social progress for undocumented reasons but who were considered capable of doing so. Each of the two groups were further divided: the mainstream subjects were randomly assigned to either Experimental or Control groups as were the target subjects. The Rosenberg Self-Esteem Scale was administered, data were collected, coded, and

BEST COPY AVAILABLE

analyzed. One main null hypothesis was developed which would meet the requirements outlined in the statement of purpose. An ANOVA was administered to test the hypothesis. If the null hypothesis was rejected, the t-test was to be used to test the between groups data to isolate the statistical significance. The results of the data analysis are presented in this chapter.

Following are the hypotheses and the data analysis formulated to answer the questions relevant to the problem.

Hypothesis: No statistically significant differences exist among the scores representing self-esteem of mainstream and target experimental and control middle school students as measured by the Rosenberg Self-Esteem Scale.

An ANOVA was used to compare the within group variance to the among group variance of the Target Control, Target Experimental, Mainstream Control, Mainstream Experimental, Total Target, Total Mainstream, Total Experimental, and Total Control groups.

The mean scores ranged from 28.16 for the Target Control group to 30.79 for the Target Experimental. The standard deviation ranged from 3.46 for the Mainstream Experimental to 4.89 for the Target Experimental. There were 7/262 degrees of freedom. The F-ratio was -217.56 which was significant at or beyond the .01 level. Since the Alpha level of .05 was chosen for statistical significance, the hypothesis was rejected. Table 1 presents the data relevant to the hypothesis.

Since the main null hypothesis was rejected, the t-test was applied to the data collected to test the sub-hypotheses.

BEST COPY AVAILABLE

Table 1

Analysis of Variance of Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of Selected Middle School Students

Group	N	Mean	SD	Sum of SQ	Mean Scores	E Value
Target Control	19	28.63	4.42	15704	826.53	
Target Experimental	19	30.79	4.89	18477	972.47	
Mainstream Control	25	28.84	4.80	21369	854.47	
Mainstream Experimental	27	29.63	3.46	24026	889.85	-217.56*
Total Target	38	29.71	4.82	34181	899.5	
Total Mainstream	52	28.75	4.20	45395	872.98	
Total Experimental	46	30.11	4.12	42503	923.98	
Total Control	44	28.16	4.63	37073	842.57	

Degrees of freedom 7/262.

*Significant at or beyond the .01 level.

BEST COPY AVAILABLE

Sub-hypothesis I: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Experimental group and the Control group of selected middle school students.

The data pertaining to the sub-hypothesis were analyzed and presented in Table 2.

Table 2

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Experimental Group and the Control Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Experimental	46	30.11			
			4.43	88	.000 *(**)
Control	44	28.16			

*Significant at or beyond the .05 level.
**Probability rounded to the nearest thousandth. The probability, rounded to the nearest hundred thousandth was .00003.

The Control group had a mean score of 28.16 while the Experimental group had a mean score of 30.11 with 88 degrees of freedom, the probability was .000 (rounded; the actual t-probability was .00003 rounded to the nearest hundred thousandth). Since there was statistical significance, Sub-hypothesis I was rejected.

Sub-hypothesis II: No statistically significant differences exist between the mean scores representing the self-esteem as measured

BEST COPY AVAILABLE

by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Control group of selected middle school students.

The data pertaining to the sub-hypothesis were analyzed and presented in Table 3.

The t-value of 2.91 yields a probability of .006 which was statistically significant. Therefore, Sub-hypothesis II was rejected.

Table 3

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Mainstream Control Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target Experimental	19	30.79			
			2.91	42	.006*
Mainstream Control	25	28.84			

*Significant at or beyond the .05 level.

Sub-hypothesis III: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Target Control group of selected middle school students.

The data pertaining to the sub-hypothesis were analyzed and presented in Table 4.

The Target Experimental group had a mean score of 30.79 while the Target Control group had a mean score of 28.63 with 36 degrees of

BEST COPY AVAILABLE

freedom and a t-value of 3.09, the .004 probability enables the researcher to reject the hypothesis.

Table 4

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Target Control Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target Experimental	19	30.79			
			3.09	36	.004*
Target Control	19	28.63			

*Significant at or beyond the .05 level.

Sub-hypothesis IV: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Experimental group of selected middle school students.

The data pertaining to the sub-hypothesis were analyzed and presented in Table 5.

The t-value of 1.87 with 44 degrees of freedom yielded a t-probability of .068 which below the .05 level needed for statistical significance. Therefore, the hypothesis was not rejected.

Sub-hypothesis V: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Mainstream Experimental group and the Mainstream Control group of selected middle school students.

BEST COPY AVAILABLE

Table 5

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Experimental Group and the Mainstream Experimental Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target Experimental	19	30.79			
			1.87	44	.068
Mainstream Experimental	27	29.63			

No Significant Difference.

The data relevant to the hypothesis were analyzed and presented in Table 6.

Table 6

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Mainstream Experimental Group and the Mainstream Control Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Mainstream Experimental	27	29.63			
			1.39	50	.118
Mainstream Control	25	28.84			

No Significant Difference.

BEST COPY AVAILABLE

The mean scores of 29.63 and 28.84 with 50 degrees of freedom yielded a t-value of 1.39 and a t-probability of .118. Since the .118 was not at or beyond the .05 level, the hypothesis was not rejected.

Sub-hypothesis VI: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Control group of selected middle school students.

The data relevant to Sub-hypothesis VI were analyzed and presented in Table 7.

Table 7

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Control Group and the Mainstream Control Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target Control	19	28.63			-
			-.32	42	.766
Mainstream Control	25	28.84			

No Significant Difference.

Between-group comparisons of the Target and Mainstream Control groups yielded no significant difference.

Sub-hypothesis VII: No statistically significant differences exist between the mean scores representing the self-esteem as measured

BEST COPY AVAILABLE

by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Experimental group of selected middle school students.

The data relevant to the sub-hypothesis were analyzed and presented in Table 8.

Table 8

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Control Group and the Mainstream Experimental Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target Control	19	28.63			
			-1.67	44	.102
Mainstream Experimental	27	29.63			

No Significant Difference.

Sub-hypothesis VIII: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target group and the Mainstream group of selected middle school students.

The data were analyzed and reported in Table 9.

The Target group had a mean score of 29.71 while the Mainstream group had a mean score of 28.75. The t-value of .5 yielded a probability of .618. Therefore, the hypothesis was not rejected.

BEST COPY AVAILABLE

Table 9

Between Group Comparisons of the Mean Scores Representing the Self-Esteem as Measured by the Rosenberg Self-Esteem Scale of the Target Group and the Mainstream Group of Selected Middle School Students

Groups	N	Mean	t-value	df	probability
Target	38	29.91			
			.5	88	.618
Mainstream	52	28.75			

No Significant Difference.

BEST COPY AVAILABLE

Chapter 5

SUMMARY, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The problem of the study was the effectiveness of a specially prepared paper in affecting the self-esteem of selected middle school students. The paper, marketed as Super-Paper by Suppa Corporation, Fallbrook, California, was custom-made for purposes of this study.

This study investigated whether the subjects' self-esteem could be affected by the presentation of a selected stimulus below the threshold of conscious awareness via the medium of the specially prepared paper. It also investigated whether any statistically significant differences existed between the effects on their self-esteem of a selected stimulus presented below the threshold of conscious awareness of mainstream students and of target students.

Low self-esteem was seen to be a reason why an infinite number of learners in our schools were not achieving to a degree or at a level that indications of ability say they should have been.

Recent findings indicate that learner attitudes can be affected by stimuli that are presented at a preconscious level. Ledford (1980) concluded that "constantly occurring stimulation, registered beneath a conscious level of perception, is one vehicle which can intercept or reinforce learning. Due to the physical limitations of [human's] senses

BEST COPY AVAILABLE

BEST COPY AVAILABLE

there will always be stimuli beneath the level of a learner's conscious awareness which will somehow affect his learning capabilities. It is the duty of research within education to explore those factors which influence the learner and his learning environment." McCormack (1980) found that statistically significant differences resulted from different levels of projected light intensities and durations in an effort designed to manipulate students' submission of controlled attention to a learning task. McCormack also concluded "that this (his) study has served to further confirm the conclusions of the Ledford study." Grant (1980) attempted to find out if psychomotor skills of learners could be affected by the registration of preconscious stimulation. He found no such effect; neither actual participation nor submission of controlled attention toward psychomotor activities significantly affected. Grant did conclude that "a trend does exist that females could possibly be affected by visual . . . (preconscious) stimulation to a greater degree than males." It must be noted that the Grant study concentrated on the psychomotor domain while the Ledford and McCormack studies dealt with the affective domains of learning. Their research findings are consistent with findings of other researchers which show little or no gain in the cognitive or psychomotor domain, but show significant effect on the affective level.

The following questions were answered by the study:

1. Can a student's self-esteem be affected by the presentation of a selected stimulus below the threshold of conscious awareness?

2. Are there any statistically significant differences between the effects on their self-esteem of a selected stimulus presented below

BEST COPY AVAILABLE

the threshold of conscious awareness of mainstream students and of target students?

Learners who had a record of under-achievement when indicators pointed to ability to achieve at average or above mainstream levels were selected as Target Learners. Each learner was randomly assigned to either of two groups designated as Target Control, which received no experimental stimulus, or Target Experimental, which did receive an experimental stimulus. Each of these groups was a member of a larger group designated as either Control or Experimental.

Learners who were achieving at normal or above normal levels were called Mainstream Learners and were randomly selected and randomly assigned to either Experimental or Control groups as were the target students.

The self-esteem of each of the subjects in the experimental groups (both Mainstream and Target) was measured by the Rosenberg Self-Esteem Scale. The experiment variables which were administered to each subject was the paper on which the instrument was administered and the visual message contained on the paper. The paper was regular 8 1/2" x 11" flat-finish bond paper except a visual image had been placed on it to be perceived at a level below that of conscious awareness (see Appendix A). The message was designed to boost the self-esteem of the subjects. It contained the linguistic cue "I LOVE YOU" and the symbol of a Valentine heart in such a manner as always to be in book-order for the subject to view.

The self-esteem of each of the subjects in the Control group (both Mainstream and Target) was measured by the Rosenberg Self-Esteem

BEST COPY AVAILABLE

Scale which was administered to each subject on untreated 8 1/2" x 11" flat-finished bond paper.

Data were collected and analyzed for statistical significance using the Analysis of Variance and t-test. The Alpha level .05 was chosen for statistical significance and each null hypothesis was accepted or rejected using that criterion.

Following are the hypotheses and the results of the data analysis formulated to answer the question relevant to the problem of the study:

Hypothesis: No statistically significant differences exist among the scores representing self-esteem of mainstream and target experimental and control middle school students as measured by the Rosenberg Self-Esteem Scale. An ANOVA was used to compare the within group variance to the among group variance of the Target Control, Target Experimental, Mainstream Experimental, Mainstream Control, Total Target, Total Mainstream, Total Experimental, and Total Control groups. The F-ratio was -217.56 which was statistically significant beyond the .05 level. Therefore, the hypothesis was rejected.

Since the main null hypothesis was rejected, the t-test was applied to the data to test the sub-hypotheses.

Sub-hypothesis I: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Experimental group and the Control group of selected middle school students. The hypotheses was rejected.

BEST COPY AVAILABLE

Sub-hypothesis II: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Control group of selected middle school students. The hypothesis was rejected.

Sub-hypothesis III: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Target Control group of selected middle school students. The hypothesis was rejected.

Sub-hypothesis IV: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Experimental group and the Mainstream Experimental group of selected middle school students. No statistically significant differences.

Sub-hypothesis V: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Mainstream Experimental group and tne Mainstream Control group of selected middle school students. No statistically significant differences.

Sub-hypothesis VI: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Control group of selected middle school students. No statistically significant differences.

BEST COPY AVAILABLE

Sub-hypothesis VII: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target Control group and the Mainstream Experimental group of selected middle school students. No statistically significant differences.

Sub-hypothesis VIII: No statistically significant differences exist between the mean scores representing the self-esteem as measured by the Rosenberg Self-Esteem Scale of the Target group and the Mainstream group of selected middle school students. No statistically significant differences.

Table 10 is a summary of the findings of the statistical analysis of data related to the hypotheses.

DISCUSSION

Comparisons between the Experimental group and the Control group and between the Mainstream group and the Target group constituted the most significant tests. Of lesser importance, yet salient, were comparisons between Mainstream Experimental and Control, between Target Experimental and Control, between Mainstream Experimental and Target Control, and between Target Experimental and Mainstream Control.

Statistical significance was found between Experimental and Control groups, with the Experimental group having the high mean score. The obvious conclusion is that the self-esteem (the dependent variable), of the experimental population of the study was positively enhanced by the technique.

BEST COPY AVAILABLE

Table 10

Summary of Findings of Statistical Analysis of Data Related to the Hypotheses

Hypotheses (Summary) (Actual stated in null form)	F-value	t-value	probability	accepted/ rejected
MAIN: ANOVA (within group: among group comparison of Mainstream, Target, Experimental, and Control)	-217.56		>.05	rejected
Sub I: t-test (between groups comparison of Experimental and Control)		4.43	>.05	rejected
Sub II: t-test (between group comparison of Target Experimental and Mainstream Control)		2.91	>.05	rejected
Sub III: t-test (between group comparison of Target Experimental and Target Control)		3.09	>.05	rejected
Sub IV: t-test (between group comparison of Target Experimental and Mainstream Experimental)		1.87	<.05	accepted
Sub V: t-test (between group comparison of Mainstream Experimental and Mainstream Control)		1.39	<.05	accepted
Sub VI: t-test (between group comparison of Target Control and Mainstream Control)		-.32	<.05	accepted
Sub VII: t-test (between group comparison of Target Control and Mainstream Experimental)		-1.67	<.05	accepted
Sub VIII: t-test (between group comparison of Target and Mainstream)		.5	<.05	accepted

BEST COPY AVAILABLE

When the mean scores of the target population were compared with the mean scores of the mainstream population, no statistically significant differences were found. This would seem to indicate that the technique is no more or no less effective with either Mainstream or Target Learners. It is equally of value to learners who fit either profile.

The conclusion tnat the technique is equally of value is equally supported when comparing the Target Experimental and Target Control groups. When making this comparison, the Target Experimental group had a significantly higher score, again denoting that the technique is effective in enhancing self-esteem. Too, the reliability of the technique is enhanced in that one could surmise that if there was a statistical significance between all Experimental and Control, there should be statistical significance between Target Experimental and Control. If this were were the case, then it would follow that statistical significance should be present when comparing the mean scores of the Mainstream Experimental and Control groups. The Mainstream Experimental group had a higher mean score, thereby making the results appear to be significant. However, the probability was at the .11 level which, while noteworthy, was not significant at the .05 level. After further analysis, however, the lack of statistical significance was attributed not the the lack of gain in mean score, but to differences in self-esteem levels contributing to a smaller window of growth for the mainstream subjects.

This conclusion is supported when comparing the mean scores of Mainstream Control and Target Control. The Mainstream Control group had a higher mean score and was less homogenous than the Target Control. Therefore, there was less room for variance in the Mainstream group. In

BEST COPY AVAILABLE

short, the technique of affecting the self-esteem of learning by using a specially prepared paper to present a certain stimulus below the threshold level of conscious awareness is effective, and the test results show the consistency of the effect.

When comparing the mean scores of the Target Experimental group with the Mainstream Control group, statistical significance is found. This finding is consistent with the other findings of statistical significance in that an Experimental group, when compared to a Control group, had a significantly higher self-esteem.

It would follow then, that if both Mainstream and Target groups benefitted from the treatment, there should be no significant differences between the Target Experimental and Mainstream Experimental groups. No significant differences were found which gives additional external validity.

Another finding which strengthens the validity of the results is that no significant differences were found between the scores representing the self-esteem of the Target Control and Mainstream Control groups. This indicates that the independent variable of the treatment is the controlled variable causing effect.

When comparing the Mainstream Experimental group to the Mainstream Control and to the Target Control group, no significant differences were found. This might indicate that the technique is not quite as effective with mainstream subjects, an area which would benefit from additional research.

The review of the literature has amply demonstrated that the phenomenon of preconscious perception and automatic activation does

BEST COPY AVAILABLE

exist. While scientific controversy once centered on existence, the controversy now extends to understanding how it works, what it tells us about the conscious and unconscious psychological processes, and application of these principles. Also left unanswered and perhaps the most important question is the threat to the rights of individual autonomy and personal privacy. Arguably, any message not deliberately disclosed to the receiver is a preconscious stimulus that is designed to elicit an automatic (favorable) response from the receiver. For example, any posturing, or histrionic behavior on the part of the teacher to boost learner motivation could fit the definition of preconscious perception and automatic activation. Is this act an invasion of personal privacy and a threat to the right of the individual's autonomy to remain unmotivated if he or she chooses? In the judgement of the researcher, this question is left unanswered and is worthy of further study.

CONCLUSIONS

Based upon the analysis of the data related to the study the following conclusions are drawn:

1. The technique of transmitting a message at a preconscious level via a specially treated paper is effective in enhancing the self-esteem of middle school age subjects.

2. Subjects who were identified as under-achievers and who had problems in socialization appeared to benefit slightly more from the techniques than did mainstream subjects.

3. Both Mainstream and Target Experimental groups showed enhancement of self-esteem.

BEST COPY AVAILABLE

BIBLIOGRAPHY

A. BOOKS

Dixon, Norman F. Subliminal Perception: The Nature of a Controversy. London: McGraw-Hill, 1971.

Jung, Carl. Man and His Symbols. Garden City, NY: Doubleday and Co., 1964.

Key, Wilson B. Subliminal Seduction. Englewood Cliffs, NJ: New American Library, 1973.

Toffler, Alvin. Future Shock. New York: Bantam Books, 1971.

Webster's New Collegiate Dictionary. Springfield, MA: G. and C. Merriam Co., 1974.

B. PERIODICALS

Anderson, ALf L., Ingrid Fries, and Gudmund J. Smith. "Change in After-image and Spiral Aftereffect Serials Due to Anxiety Caused by Subliminal Threat," Scandanavian Journal of Psychology, 11:1:7-16, 1970.

Barber, Paul J. "Experimenter Bias Against Subliminal Perception? A Rejoinder," British Journal of Psychology, 68:281-82, August, 1977.

_____, and J. Philippe Ruston. "Experimenter Bias and Subliminal Perception," British Journal of Psychology, 66:357-72, August, 1975.

Beisgen, Robert T., Jr., and Robert G. Gibby, Jr. "Autonomic and Verbal Discrimination of a Subliminally Learned Task," Perceptual and Motor Skills, 29:2:503-7, 1969.

Blum, Gerald S. "An Experimental Reunion of Psychoanalytic Theory with Perceptual Vigilance and Defense," Journal of Abnormal and Social Psychology, 49:1:94-98, 1954.

_____. "Reply to Jennings and George," Perceptual and Motor Skills, 41:957-58, December, 1975.

BEST COPY AVAILABLE

Eagle, Morris N., David L. Wolitzsky, and George S. Klein. "Imagery: Effect of a Concealed Figure in a Stimulus," Science, 151:837-39, February, 1966.

Erdelyi, Matthew H. "Role of Fantasy of the Poetzl (Emergence) Phenomenon," Journal of Personality and Social Psychology, 24:2:186-90, 1972.

Foodman, Allan. "Hemispheric Assymmetrical Brain Wave Indicators of Unconscious Mental Processes," Journal of Operational Psychiatry, 7:1:3-15, 1976.

Friedman, Stanley. "Perceptual Registration of the Analyst Outside of Awareness," Psychoanalytic Quarterly, 76:1:128-30, 1976.

George, Stephen G., and Luther B. Jennings. "Effects of Subliminal Stimuli on Consumer Behavior: Negative Evidence," Perceptual and Motor Skills, 41:3:847-54, 1975.

_____, and _____. "Effects of Subliminal Stimuli on Dreams: Further Evidence Against the Spence-Holland Theory," Perceptual and Motor Skills, 35:251-57, August, 1972.

_____, and _____. "Re-Examination of the Effect of Subliminal Verbal Food Stimulus on Subjective Hunger Ratings," Psychological Reports, 30:2:521-22, 1972.

Greenburg, Nathan. "The Effects of Subliminal Neutral and Aggressive Stimuli on the Thought Processes of Schizophrenics," Canadian Journal of Behavioural Science, 9:187-96, April, 1977.

Harrison, Robert H. "Effect of Subliminal Shock Conditioning on Recall," Journal of Abnormal Psychology, 75:19-29, February, 1970.

Hart, Larry. "The Effect of Noxious Subliminal Stimuli on the Modification of Attitudes Toward Alcoholism: A Pilot Study," British Journal of Addiction, 68:87-90, June, 1973.

Hawkins, Del. "The Effects of Subliminal Stimulation on Drive Level and Brand Preference," Journal of Marketing Research, 7:322-26, August, 1970.

Herrick, Robert M. "Foveal Light-Detection Thresholds with Two Temporally Spaced Flashes: A Review," Perception and Psychophysics, 15:361-67, April, 1974.

Jeffmar, Marianne. "Ways of Cognitive Action: A Study of Syncretism, Flexibility, and Exactness," Psychological Research Bulletin, 16:1:47, 1976.

 BEST COPY AVAILABLE

Jennings, Luther B., and Stephen G. George. "Perceptual Vigilance and Defense Revisited: Evidence Againts Blum's Psychoanalytic Theory of Subliminal Perception," Perceptual and Motor Skills, 41:723-29, December, 1975.

_____, and _____. "The Spence-Holland Theory of Subliminal Perception: A Re-Examination," Psychological Record, 20:495-504, Fall, 1970.

Kleespies, Phillip, and Morton Wierner. "The Orienting Reflex as an Input Indicator in Subliminal Perception," Perceptual and Motor Skills, 35:1:103-10, 1972.

LeClerc, Claude, and Vaira Freibergs. "The Influence of Subliminal Perceptive and Symbolic Indices on the Formation of a Concept," Canadian Journal of Psychology, 25:292-301, August, 1971.

Murch, Gerald M. "A Set of Conditions for a Consistent Recovery of Subliminal Stimulus," Journal of Applied Psychology, 49:4:257-60, 1965.

O'Grady, Michael. "Effect of Subliminal Pictorial Stimulation on Skin Resistance," Perceptual and Motor Skills, 45:3:1051-56, 1977.

Oxhandler, Eugene K. "Can Subliminal Stimuli Teach?", Audio Visual Communications Review, 7:3:109-14, 1960.

Reese, W. J. "On the Terms 'Subliminal Perception' and 'Subception,'" British Journal of Psychology, 62:501-4, November, 1971.

Rutstein, Eleanor H., and Leo Goldberg. "The Effects of Agggressive Stimulation on Suicidal Patients: An Experimental Study of the Psychological Theory of Suicide," Psychoanalysis and Contemporary Science, 2:157-74, 1973.

Sackheim, Harold A., Ira K. Packer, and Ruben G. Cur. "Hemisphericity, Cognitive Set, and Susceptibility to Subliminal Perception," Journal of Abnormal Psychology, 6:624-30, 1977.

Schwartz, Marvin. "On Testing Specific Hypotheses About Subliminal Perception: A Reply to Shevrin," Psychophysiology, 13:27-31, January, 1976.

_____, and Michael A. Rem. "Does the Average Evoked Response Encode Subliminal Perception?", Psychophysiology, 12:390-94, July, 1975.

Severance, Laurence J., and Frederick N. Dyer. "Failure of Subliminal Word Presentations to Generate Interference to Color Naming," Journal of Experimental Psychology, 101:186-89, November, 1973.

Sharp, Heber C. "Effect of Subliminal Cues on Test Results," Journal of Applied Psychology, 43:6:369-71, 1959.

Shevrin, Howard. "Brain Wave Correlates of Subliminal Stimulation, Unconscious Attention, Primary-and-Secondary Process Thinking, and Repressiveness," Psychological Issues, 8:2:56-87, 1973.

_____. "Does the Average Evoked Response Encode Subliminal Perception? Yes. A Reply to Schwartz and Rem," Psychophysiology, 12: 395-98, July, 1975.

Shevrin, Howard, and Dean E. Fritzler. "Visual Evoked Response Correlates of Unconscious Mental Processes," Science, 161:295-98, July, 1968.

_____, William H. Smith, and Dean E. Fritzler. "Average Evoked Response and Verbal Correlates of Unconscious Mental Processes," Psychophysiology, 8:149-62, March, 1971.

_____, _____, and _____. "Repressiveness as a Factor in the Subliminal Activation of Brain and Verbal Responses," Journal of Nervous and Mental Disease, 149:3:261-69, 1969.

_____, _____, and _____. "Subliminally Stimulated Brain and Verbal Responses of Twins Differing in Repressiveness," Journal of Abnormal Psychology, 76:1:39-46, 1970.

Silverman, Lloyd H. "Drive Stimulation and Psychopathology: On the Conditions Under Which Drive-Related External Events Evoke Pathological Reactions," Psychoanalysis and Contemporary Science, 72: 1:306-26, 1972.

_____. "An Experimental Technique for the Study of Unconscious Conflict," British Journal of Medical Psychology, 44:17-25, March, 1971.

_____. "On the Role of Laboratory Experiments in the Development of the Clinical Theory of Psychoanalysis: Data on the Subliminal Activation of Aggressive and Merging Wishes in Schizophrenics," International Review of Psychoanalysis, 2:1:43-64, 1975.

_____. "Psychoanalytic Theory: 'The Reports of My Death Are Greatly Exaggerated,'" American Psychologist, 31:621-37, September, 1976.

_____. "Study of the Effects of Subliminally Presented Aggressive Stimuli on the Production of Pathological Thinking in a Non-psychiatric Population," Journal of Nervous and Mental Disease, 131:4:443-55, 1966.

BEST COPY AVAILABLE

_____. "A Technique for the Study of Psychodynamic Relationships: The Effects of Subliminally Presented Aggressive Stimuli on the Production of Pathological Thinking in a Schizophrenic Population," Journal of Consulting Psychology, 30:2:103-11, 1966.

_____, and Peter Candell. "On the Relationship Between Aggressive Activation, Symbiotic Merging, Intactness of Body Boundaries, and Manifest Pathology in Schizophrenics," Journal of Nervous and Mental Disease, 150:5:387-89, 1970.

_____, and Arthur M. Goldweber. "A Further Study of the Effects of Subliminal Aggressive Stimulation on Thinking," Journal of Nervous and Mental Disease, 143:463-72, December, 1966.

Silverman, Lloyd H., and others. "A Clinical Application of Subliminal Psychodynamic Activation: On the Stimulation of Symbiotic Fantasies as an Adjunct in the Treatment of Hospitalized Schizophrenics," Journal of Nervous and Mental Disease, 161:6:379-92, 1975.

_____, and _____. "The Effects of Aggressive Activation and the Need to Merge on Pathological Thinking in Schizophrenia," Journal of Nervous and Mental Disease, 148:1:39-51, 1969.

_____, and _____. "The Effects of Subliminal Drive Stimulation on the Speech of Stutterers," Journal of Nervous and Mental Disease, 155:1:14-21, 1972.

_____, and Doris K. Silverman. "A Clinical-Experimental Approach to the Study of Subliminal Stimulation: The Effects of a Drive-Related Stimulus Upon Rorschach Responses," Journal of Abnormal and Social Psychology, 69:2:156-72, 1964.

_____, and Stephen E. Silverman. "The Effects of Subliminally Presented Drive Stimuli on the Cognitive Functioning of Schizophrenics," Journal of Projective Techniques and Personality Assessment, 31:78-85, February, 1967.

_____, and Robert H. Spiro. "The Effects of Subliminal, Supraliminal, and Vocalized Aggression on the Ego Functioning of Schizophrenics," Journal of Nervous and Mental Disease, 146:1:50-61, 1968.

_____, and _____. "Further Investigations of the Effects of Subliminal Aggressive Stimulation on the Ego Functioning of Schizophrenics," Journal of Consulting Psychology, 31:3:225-32, 1967.

BEST COPY AVAILABLE

_____, Abbot Bronstein, and Eric Mendelsohn. "The Further Use of Subliminal Psychodynamic Activation Method for the Experimental Study of the Clinical Theory of Psychoanalysis: On the Specificity of the Relationship Between Symptoms and Unconscious Conflicts," Psychotherapy: Theory, Research, and Practice, 13:1:2-16, 1976.

Smith, G. J. W, D. P. Spence, and G. S. Klein. "Subliminal Effects of Verbal Stimuli," Journal of Abnormal and Social Psychology, 59: 2:167-76, 1959.

Somekh, David E. "The Effect of Embedded Words in a Brief Visual Display," British Journal of Psychology, 67:529-35, November, 1976.

_____, and J. N. Wilding. "Perception Without Awareness in a Dichoptic Viewing Situation," British Journal of Psychology, 64: 3:339-49, 1973.

Spence, Donald P., and Carol M. Gordon. "Activation and Assessment of an Early Oral Fantasy: An Exploration Study," Psychological Issues, 8:2:11-28, 1973.

_____, and Bert Holland. "The Restricting Effects of Awareness: A Paradox and an Explanation," Journal of Abnormal and Social Psychology, 64:3:163-74, 1977.

_____, and Gudmund J. Smith. "Experimenter Bias Against Subliminal Perception: Comments on a Replication," British Journal of Psychology, 68:279-80, August, 1977.

Spiro, Robert H., and Lloyd H. Silverman. "Effects of Body Awareness and Aggressive Activation on Ego Functioning of Schizophrenics," Perceptual and Motor Skills, 28:575-85, April, 1969.

Tippett, Jean, and E. Silber. "Self-image Stability: The Problem of Validation," Psychological Reports, 17:323-329, 1965.

Vernon, Jack A., and David H. Badger. "Subliminal Stimulation in Human Learning," American Journal of Psychology, 72:265-70, June, 1959.

Wagstaff, Graham F. "The Effects of Repression-Sensitization on a Brightness Scaling Measure of Perceptual Defence," British Journal of Psychology, 65:395-401, August, 1974.

Walker, Peter. "The Subliminal Perception of Movement and the Suppression in Binocular Rivalry," British Journal of Psychology, 66: 347-56, August, 1975.

BEST COPY AVAILABLE

Watson, Georgia B. "Motor Response Latency as an Indicator of Subliminal Affective Stimulation," Journal of General Psychology, 82: 139-43, April, 1970.

Worthington, A. G. "Paired Comparison Scaling of Brightness Judgements: A Method for the Measurement of Perceptual Defence," British Journal of Psychology, 60:3:363-68, 1969.

C. DISSERTATIONS

Candela, Anthony J. "Memory as a Function of Defensive Style and Type of Aggressive Stimuli." Unpublished Doctoral dissertation, New York University, 1975.

DeChenne, James A. "An Experimental Study to Determine if a Task Involving Psychomotor and Problem Solving Skills Can Be Taught Subliminally." Unpublished Doctoral dissertation, Virginia Polytechnic Institute and State University, 1976.

Martin, April. "The Effect of Subliminal Stimulation of Symbiotic Fantasies on Weight Loss in Obese Women Receiving Behavioral Treatment." Unpublished Doctoral dissertation, New York University, 1975.

Taris, Louis J. "Subliminal Perception: An Experimental Study to Determine Whether a Science Concept Can Be Taught Subliminally to Fourth-Grade Pupils." Unpublished Doctoral dissertation, Boston University, 1970.

Veeder, Gerry E. K. "The Influence of Subliminal Suggestion on the Response to Two Films." Unpublished Doctoral dissertation, Wayne State University, 1975.

D. DISSERTATION ABSTRACTS

Antell, Maxine J. "The Effects of Priming and Subliminal Presentation of Sexual and Aggressive Stimuli on Tests of Creativity," Dissertation Abstracts International, 30 (1969), 3859B (New York University).

Bronstein, Abbot A. "An Experimental Study of Internalization Fantasies in Schizophrenic Men," Dissertation Abstracts International, 37 (1976), 4665B (Yeshiva University).

BEST COPY AVAILABLE

Cohen, Roni O. "The Effects of Four Subliminally-Introduced Merging Stimuli on the Psychopathology of Schizophrenic Women," Dissertation Abstracts International, 38 (1977), 2356B (Columbia University).

Cox, Louis D. "Depressive Symptoms as Affected by Aggressive Stimuli Subliminally and Supraliminally Presented," Dissertation Abstracts International, 35 (1974), 1402B (College of William and Mary).

Holtzman, Deanna. "Recall and Importation on a Word Test Primed by a Subliminal Stimulus," Dissertation Abstracts International, 36 (1975), 2473B (Wayne State University).

Hull, Ethel I. "Ego States Characteristic of Enhanced Utilization of Subliminal Registrations," Dissertation Abstracts International, 37 (1976), 1903B (University of Chicago).

Kaley, Harriette W. "The Effects of Subliminal Stimuli and Drive on Verbal Responses and Dreams," Dissertation Abstracts International, 31 (1970), 2284B (New York University).

Kaplan, Rosalind B. "The Symbiotic Fantasy as a Therapeutic Agent: An Experimental Comparison of the Effects of Three Symbiotic Elements on Manifest Pathology in Schizophrenics," Dissertation Abstracts International, 37 (1976), 1437B (New York University).

Katz, Robert J. "Subliminal Perception and Creative Preconscious," Dissertation Abstracts International, 34 (1973), 1751B (Texas Tech University).

Kaye, Melvin M. "The Therapeutic Value of Three Merging Stimuli for Male Schizophrenics," Dissertation Abstracts International, 36 (1975), 1438B (Yesniva University).

Kohlers, Paul A. "Subliminal Stimulation in Simple and Complex Cognitive Processes," Dissertation Abstracts International, 33 (1972), 1269B (New York University).

Leiter, Eli. "A Study of the Effects of Subliminal Activation of Merging Fantasies in Differentiated and Non-Differentiated Schizophrenics," Dissertation Abstracts International, 34 (1973), 4022B (New York University).

Lieberman, Harvey J. "A Study of the Relationship Between Developmentally Determined Personality and Associated Thought Styles and Tachistoscopic Exposure Time as Reflected in Conflict Resolution," Dissertation Abstracts International, 35 (1974), 5670B (Pennsylvania State University).

BEST COPY AVAILABLE

Litwack, Thomas R. "A Study of Certain Issues Concerning the Dynamics of Thinking and Behavioral Pathology in Schizophrenics Through the Use of Subliminal Stimulation," Dissertation Abstracts International, 33 (1972), 918B (New York University).

Lomangino, Louis F. "Depiction of Subliminally and Supraliminally Presented Aggressive Stimuli and Its [Their] Effects on the Cognitive Functioning of Schizophrenics," Dissertation Abstracts International, 30 (1969), 1900B (Fordham University).

Rudolph, James R. "Selective Subliminal Perception Relative to Approach/Avoidance Tendencies," Dissertation Abstracts International, 31 (1970), 1695A (University of Southern California).

Silverman, Stephen E. "The Effects of Subliminally Induced Drive Derivations on Ego Functioning in Schizophrenics," Dissertation Abstracts International, 31 (1970), 2291B (New York University).

Skinner, William S., Jr. "The Effect of Subliminal and Supraliminal Words Presented via Videotaped Motion Pictures on Vocabulary Development of Ninth-Grade Students," Dissertation Abstracts International, 30 (1969), 2430A (Arizona State University).

Spiro, Tova W. "The Effects of Subliminal Symbiotic Stimulation and Strengthening Self-Boundaries of Schizophrenic Pathology," Dissertation Abstracts International, 36 (1975), 5818B (New York University).

Varga, Michael P. "An Experimental Study of Aspects of the Psychoanalytic Study of Elation," Dissertation Abstracts International, 34 (1973), 4062B (New York University).

GOVERNMENT DOCUMENTS

Subliminal Communication Technology (No. 105). Hearing before the Subcommittee on Transporation, Aviation, and Materials of the Committee on Science and Technology, U.S. House of Representatives, 98th Congress, 2nd session, August, 1984.

UNPUBLISHED WORKS

Becker, Hal C. Subliminal Communication and Hypnosis. Denver: A poster session presentation to the American Society of Clinical Hypnosis, 1982.

BEST COPY AVAILABLE

Weinstein, Sidney, Curt Weinstein, and Ronald Drozdenko. Advertising on Super-Paper: Effects Upon Brain Response, Purchase Intention, and Simulated Purchase. Danbury, CT: NeuroCommunication Research Laboratories, Inc., 1984.

APPENDICES

APPENDIX A

THE TEST PAPER

APPENDIX B

THE MASTER FOR THE PRECONSCIOUS MESSAGE

I
LOVE
YOU

I
LOVE
YOU